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"Agriculture is the most Healthful, the most Useful, the most Noble Employment of Man."—WASHINGTON.

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☞ *The stars (*) in the following Index show where engravings occur. Articles referring directly or indirectly to Cattle, Flowers, Poultry, Insects, Manures, Trees, Weeds, etc., will be found indexed under these general heads.*

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AMERICAN AGRICULTURIST

FOR THE

Farm, Garden, and Household.

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THE FARMER'S NEW YEAR'S CALLERS.—DRAWN BY R. E. ROBINSON.

Birds in winter are always welcome. Perhaps we notice them more readily when the whole landscape is covered with snow; their quick motions bring life to the profound quiet, and their chirpings seem like music in the noiseless winter morning. Even a few Chickadees and common Snow-birds are welcome, for their quick and pleasing motions, but when the north wind brings down a whole flock of Snow Buntings, then there is life in earnest. Our farmer artist, to whom we are indebted for many drawings of birds from life, gives us a view of a visit of the Snow Buntings, which he entitles "The Farmer's New Year's Callers." The Snow Bunting, or Snow-flake, is found throughout the Arctic circle, and comes down to us only in winter, being quite frequent along our northern border, and sometimes reaches as far south as Maryland. The birds fly in large and compact flocks, and as they often come before driving winds and sweeping snow-storms, their appearance is regarded as the forerunner of severe weather. Being deprived of nearly all food in their northern home, their journey southward is apparently one of necessity; they do not remain long at any place until they reach the vicinity of the sea-coast, where, in the salt marshes, they become very fat. Inland they appear to be very unsettled and impatient; they sometimes settle in large numbers near the house, alighting on fences and bushes, or in the yards and roads, actively seeking food. It is an act of kindness to do as our farmer is doing, and welcome the callers with a bit of cheer. The bird comes to us in its winter dress, in which white predominates, with cloudings of brown, and occasionally the back, wings, and tail, variegated with black. It is sometimes called the "White Snow-bird," to distinguish it from the more frequent winter visitor. The Snow Bunting, while it feeds mainly upon seeds, is very fond of small shell fish, frequenting both fresh and salt marshes in search of these. Aside from the pleasure they afford to those who welcome them as imparting life to the winter scene, others take a different view of them, and consider their value by the dozen in the market. After they have been in our latitude, especially if near the coast, for a short time, they become very fat, and are regarded as most delicate eating; they are often sold in our markets as "Ortolans." They often fly in such dense masses, that they are shot in great numbers; and many are also taken in traps. In Northern Europe the coming of these birds is a great event for the poorer classes, as it allows them to have a time of feasting. In some European countries they are caught and fattened for the table, and in far northern countries they are dried for future use.

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Calendar for January, 1880.

Day of Month.	Day of Week.	*Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon.* Sun rises.	Sun sets.	Mo'n rises.	*N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois.* Sun rises.	Sun sets.	Mo'n rises.	*Washington, Maryland, Virginia, Kentucky, Missouri, and California.* Sun rises.	Sun sets.	Mo'n rises.
		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	T	7 30	4 38	8 58	7 25	4 44	9 0	7 19	4 49	9 2
2	F	7 30	4 39	10 5	7 25	4 44	10 5	7 19	4 50	10 6
3	S	7 30	4 40	11 13	7 25	4 45	11 12	7 19	4 51	11 11
4	S	7 30	4 41	morn	7 25	4 46	morn	7 19	4 51	morn
5	M	7 30	4 42	0 23	7 25	4 47	0 21	7 19	4 52	0 19
6	T	7 30	4 43	1 36	7 25	4 48	1 33	7 19	4 53	1 29
7	W	7 30	4 44	2 52	7 25	4 49	2 47	7 19	4 54	2 42
8	T	7 29	4 45	4 7	7 24	4 50	4 1	7 19	4 55	3 56
9	F	7 29	4 46	5 19	7 24	4 51	5 13	7 19	4 56	5 6
10	S	7 29	4 47	6 22	7 24	4 52	6 14	7 19	4 57	6 9
11	S	7 29	4 48	sets	7 24	4 53	sets	7 19	4 58	sets
12	M	7 28	4 49	5 58	7 23	4 54	6 1	7 18	4 59	6 6
13	T	7 28	4 50	7 12	7 23	4 55	7 15	7 18	5 0	7 18
14	W	7 27	4 52	8 24	7 23	4 56	8 25	7 18	5 1	8 26
15	T	7 27	4 53	9 32	7 22	4 57	9 31	7 17	5 2	9 32
16	F	7 27	4 54	10 37	7 22	4 59	10 36	7 17	5 3	10 35
17	S	7 26	4 55	11 41	7 21	5 0	11 38	7 17	5 4	11 36
18	S	7 25	4 56	morn	7 21	5 1	morn	7 16	5 6	morn
19	M	7 25	4 58	0 43	7 20	5 2	0 40	7 16	5 7	0 37
20	T	7 24	4 59	1 46	7 20	5 3	1 41	7 15	5 8	1 36
21	W	7 23	5 0	2 47	7 19	5 4	2 41	7 15	5 9	2 35
22	T	7 23	5 1	3 45	7 19	5 6	3 38	7 14	5 10	3 32
23	F	7 22	5 3	4 39	7 18	5 7	4 32	7 13	5 11	4 26
24	S	7 21	5 4	5 27	7 17	5 8	5 20	7 13	5 12	5 15
25	S	7 20	5 5	6 9	7 16	5 9	6 3	7 12	5 13	5 58
26	M	7 20	5 6	6 45	7 15	5 10	6 40	7 11	5 15	6 36
27	T	7 19	5 8	rises	7 15	5 12	rises	7 11	5 16	rises
28	W	7 18	5 9	6 49	7 14	5 13	6 51	7 10	5 17	6 53
29	T	7 17	5 10	7 57	7 13	5 14	7 57	7 9	5 18	7 58
30	F	7 16	5 11	9 5	7 12	5 15	9 4	7 8	5 19	9 4
31	S	7 15	5 13	10 14	7 11	5 17	10 12	7 7	5 20	10 11

PHASES OF THE MOON.

MOON.	D.	BOSTON. H. M.	N. YORK. H. M.	WASH'N. H. M.	CHA'STON H. M.	CHICAGO. H. M.
3d Quart.	5	2 5 mo.	1 53 mo.	1 41 mo	1 29 mo.	0 59 mo.
New M'n	11	5 56 ev.	5 44 ev.	5 32 ev.	5 20 ev.	4 50 ev.
1st Quart	19	1 56 mo.	1 44 mo.	1 32 mo	1 20 mo.	0 50 mo.
Full M'n	27	5 28 mo.	5 16 mo.	5 4 mo	4 52 mo.	4 22 mo.

NEW YORK, JANUARY, 1880.

Hints for the Work of the Month.

[*The Hints and Suggestions in these columns are never copied from previous years, but are freshly prepared for every month, from the latest experience and observations, by practical men in each department.*]

How do You Stand?—One cannot lay out his work to advantage, without knowing precisely how he stands with regard to his business. The beginning of the year is the appropriate time for aseertaining it. Frequently an aeeount of business is kept for a month or two, and then neglected. If it is only to encourage habits of regularity and perseveranee, it will be time well spent to keep an account, not only of money affairs, but a reeord of events for every day. This tends to beget promptness and system in every detail of farm work, and in business affairs, that foresight and economy which are everywhere the prime essentials to sueeess.

Keep a Record of the events of eaeh day's work, and farm-life. One of the boys or girls should do this. A book will be needed, ruled with plain lines, on whieh to make the entries; put down the condition of the weather, the work done, and by whom; purchases and sales made, indeed, anything that may be needed for future referenee, or that should be entered in the aeeount book, which will thus become a valuable and interesting record of the farm.

Make an Inventory:—Put down every thing you possess, from the farm itself, to the small tools and utensils, and value each item fairly. Enter the money on hand, and also every debt owed. This is the first work in beginning an aeeount. The property owned, and money on hand, will be on one side of the aeeount, and the debts on the other. The balance will show just how the farmer stands. This aeeount will be the *Account of Stock.*

Purchases and Sales, are entered in the daily reeord, and from that into a purehase and sale book; except the eash transactions, whieh go into the eash book.

The Cash Book.—Every payment and reeeipt of money for purehases, sales, or for wages, should be entered in the eash book; this should be done every evening, and before it is forgotten; all these entries are transferred to a ledger to the proper aeeounts. The work is very simple and easy, and there are farmer's girls who keep all their father's aeeounts in the most accurate manner. Fuller direetions for keeping farm accounts, were given in the *American Agriculturist* for January and February, 1879.

Hiring Men.—A farmer should try to make work for a hired man, or several if possible. If he can find profitable work for them, he is making money for himself. A few months wages spent in proeuring or making manure, draining, clearing off stone, getting out stumps, or otherwise making the farm more productive, will be well invested.

Keep the Stables Clean; clear out the manure every morning, and scrape or card off all filth from the animals. The stable should be made so warm, that the manure will not freeze at night; a lower temperature will either demand a larger amount of food, or the animals will fall off in eondition.

Pile the Manure in square and compaet heaps; and if it is not frozen when thrown out, it will heat and ferment in the pile; but if once frozen, it will be likely to remain so during all the cold weather.

In the Southern States, the work of making eompost heaps, should go on rapidly this month. Time is needed in making composts; raw mixtures are not fit for fertilizers, until the materials are decomposed. A bushel of lime added to each load, will hasten the deeay of the materials of the compost heap, and cotton seed, well soaked with water will soon heat, and warm up a large pile of eompost.

Cut the Litter.—If the litter is eut into 3-inch lengths, or even smaller, it will hold more moisture, will make better and finer manure, and will keep the animals cleaner than long litter. The gain in the quality of the manure, in one year, the saving in time in the handling, and increased effeetiveness of it, will pay good interest on the cost of a windmill, and a fodder cutter, to do the cutting. But if the stormy and disagreeable days are ehosen to cut up straw for this purpose, an abundant supply can be made. A broad axe ean be purchased for $2.50, and with this and a block, a sheaf of straw may be cut into 3-ineh ehaff, in half a minute. Two persons, one to hold the sheaf on the block or plank, and the other to use the axe, would soon cut up a ton of straw. Where hard-wood saw-dust, dry swamp muek, or pine straw can be procured, these make excellent litter and manure.

Economy in Feeding, is a very important consideration. In some cases half the feed used is wasted. Cutting the fodder has proved a saving of one-third to one-half. Where but 10 head of stoek are fed, if the feed of one-third or one-half can be saved, it is simply a large increase of the resources of the farm, and is sufficient to pay the cost of a good cutter and the time expended in cutting.

Watering Stock.—The supply of water in winter is a source of trouble. Ice gathers about the troughs and other drinking places; pipes freeze and burst, or become ehoked, and many other ineonvenienees oeeur. These may be avoided by methodieal management. Have regular watering periods, twiee a day. Fill the troughs from the pumps or eisterns, and drive the cattle to them and see that they drink. When all are supplied, empty the troughs, and either cover them or turn them over. Have no flowing water in the yards to waste and freeze, or become ice-eold for drinking. A cold drink will reduee the milk from the eows 10 per cent or more.

The Milk-Room or Spring-House.—Frozen cream will not make good butter. To prevent milk from freezing, have a small stove in the dairy, and in the spring-house make a covered box over the spring. Where a run from a spring ean be brought in pipes, a Cooley creamery ean be used during the winter with great advantage; keeping an even temperature equal to that in the summer when ice is used.

Horses.—When not at work the horses need but little grain, if suffieient good hay is given. But as hay is generally dusty, and long hay is wasted in the eating, we find it eeonomical to eut and wet the fodder, and give 3 quarts daily of bran or ground feed. The hay saved will pay for the meal, and the increased value of the manure will pay for the labor. The moist feed prevents injury to the horses from breathing the dust from dry hay.

Mares in Foal.—A roomy loose box is the safest and most eomfortable plaee for a brood mare. A colt may be raised for the same cost as a eow, and when 3 years old may be worth four cows. There

is a brisk demand for good work horses, and a large export business is growing up, so that the keeping of mares will become a source of income. But not only must the right kind be kept, and the right kind of colts be raised, but the mares must have proper stable accommodations. When a mare is idle a large portion of the time, exercise is needed, and this she can get in a loose box.

Colts.—Young colts should be well fed and cared for the first winter; provide a warm stall for them, with plenty of litter, and give them a good brushing down once every day. A quart of oats, daily, will be needed, and some bright, clean, sweet hay. Cut-feed is not suitable for young colts, whose digestion should not be overtaxed by food packed solidly in the stomach; feed light and frequently.

Work Oxen.—Oxen that work on frozen roads, although there is no ice, should be shod. The rough, hard surface wears down the hoofs very fast, and causes inflammation of the interior; the trouble may not become apparent until later, when the mischief is difficult to repair. If the feet are tender and hot, and slight lameness is perceived, examine the hoofs between the claws, cleanse the feet, and apply remedies if needed.

Cows.—Milking cows will be benefited by mixing their feed with warm water, if this can be done without too much trouble. A family cow may be treated to a warm mess in the mornings without difficulty, and it will increase the milk perceptibly. Cut the hay and pour a pailful of hot water over it; mix the mess so that the hay is all wetted, and add the meal; mix again, and feed while warm. In a dairy of 20 cows, the extra milk will pay for the labor needed. If the food can be made more digestible, and by giving it warm, the waste of animal heat will be avoided, and the same effect will result as from an increase of food. Thus the study of the principles of feeding may be made a source of profit by the economy which may be practised through it. The card and brush should be in frequent use during the winter, and if necessary a coarse cloth and warm water may be used to preserve cleanliness. If filth is permitted to gather on the skin it is difficult to remove at this season.

Young Calves will thrive well if kept in a shed together and well fed. The shed may be littered liberally, and need not be cleaned out until the spring, or until the manure has become a foot or more deep. Calves may thus become good manure-makers, but it will be necessary to feed them well. Bran and oats, with a little corn, will be the best food for them. Give one pint a day for those under a year, and a quart or two daily for yearlings. Costiveness in cold weather should be carefully guarded against, and, if necessary, half a pint of raw linseed-oil, or a pint of linseed-meal, should be given with the food as a remedy.

Sheep.—A flock of sheep may be made the most profitable of farm stock, both in return of money and of manure. By feeding a small flock well, through the winter, their value may be easily doubled. But the feeding should be liberal and the care unremitting. The chief requisites for success with sheep are, to provide abundant good food and pure *well* water; to feed and water regularly; to provide fresh pure air, and to avoid dampness. When feeding sheep for market, it is well to try the weights every second week, and note the increase. (For a method of weighing, see *American Agriculturist* for Dec., 1879, page 500.) The effects of the feeding can thus be readily ascertained and changes made if it is thought necessary.

Breeding Ewes that are expected to drop lambs early, should be closely watched. The springing of the udder is an unfailing sign of approaching parturition. The ewe should then be removed to a separate pen and kept quiet, but visited at least every three hours and the last thing at night. It is rarely that any help is needed, except, in very cold weather, to wrap a piece of soft blanket about the lamb and to help it to suck as soon as possible. As soon as the lamb gets a meal it will be all right, and the ewe may be left to herself for a few hours.

Tameness and Gentleness are qualities to be encouraged in all domestic animals. Their value is discovered when it is necessary to handle the animals at critical periods. When confidence, if not affection, exists, one can do much with a suffering animal, when otherwise interference might make matters worse. It would be well to make friends with cows, and sheep, especially, by petting them, giving them salt and palatable things, and mingling with them in the yards. Every animal should be trained to be handled when loose in the yard.

Lambs.—Lambs dropped this month should be well fed through the ewe. Give little heating food, such as corn, in any shape; but bran, oil-cake meal, and oatmeal in gruel, will be healthful and nourishing for the ewe and the lamb. In stormy weather the ewe and lamb may be kept under cover, but in fine, sunny days, they may run in a dry yard; but not with other sheep. Early lambs for market should be pushed ahead as fast as may be safe.

Pigs.—Store pigs will thrive well on roots with a slop of bran, sour milk and water. A supply of roots on hand will greatly reduce the cost of feeding store pigs. Turnips that can not well be fed to cows may be given to the pigs. Give young pigs a warm dry bed.

Lice.—The irritation of lice keeps young animals poor and miserable. To rid them of these pests, brush the skin all over thoroughly with a brush dipped in a mixture of linseed-oil and kerosene, shaking the excess of oil out before using the brush. Work the grease down to the skin; if this is persevered in the lice will soon disappear.

Poultry.—Hens and early pullets will now be laying freely. They should be encouraged by giving them warm food. Baked small potatoes taken direct from the oven, and hot, are much relished by the fowls; scalded corn-meal, corn or wheat parched in the oven, crusts of bread, or oatmeal, steeped in hot milk; and meat scraps, with some stimulating condiment, like Cayenne pepper, will be found to add greatly to the store of eggs all through the stormiest weather; but the fowls must have a dry, warm, clean, sheltered place to roost and lay in.

Ice.—Get in a supply of ice as early as possible. A stock in the house is worth two in the pond. A supply has often been missed by waiting one day too long. When ice is 6 or 8 inches thick, it should be cut and stored without delay. See article on Ice-houses in *American Agriculturist* for Dec., 1879.

Notes on Orchard and Garden Work.

The opening of a new year brings many new readers, and a word to these is here in place. It should be understood that these Notes are not written for the professional horticulturist, or commercial nurseryman; though they may contain valuable information for these, still it is taken for granted that they already possess the necessary knowledge to their business, or can find it in the works belonging to their profession. It is for the amateur that these Notes are written, and by "amateur," we mean every one who does not follow orcharding, or gardening in any of its forms, as an occupation. Farmers as well as others are to be classed as amateurs in these matters, and these Notes are made largely with the view of encouraging farmers in these branches of land culture, and to aid them when they undertake any kind of crops outside of those belonging to the farm proper.

Whoever undertakes an orchard, or fruit growing of any kind, or who has a vegetable garden, or would decorate his grounds with shrubs and flowers, should have at hand a work for reference. To be able to learn a fact, or to remedy a difficulty at once is of great value, and a book will often more than pay for itself in a single reference We give in the Basket some hints as to the contents of the leading works.

No time is so proper for useful reading as the comparatively leisure days and evenings of winter! It is a foregone conclusion that success cannot be attained in any department of human life without *work*, and the conclusion is equally clear that the work of the muscles, to be most efficient, must be guided by intelligence; the mind and the hand must labor together to bring about the greatest good.

Orchard and Nursery.

An Old Orchard is as unproductive as it is unsightly, and to one who really loves a tree, many of the orchards one sees in going about the older portions of the country, present melancholy examples of "cruelty to trees." The cause of the present condition of these trees is, partially neglect; mainly robbery. The trees could hardly been brought to their present condition had not the land for these many years been made to bear two crops. The act of planting an orchard is a promise that the trees should be fed. From the very first year these trees have had a yearly crop of grain or hay taken away from their land, except on those where the grass has been taken away by the animals pastured in the orchard. No question is more frequently asked us than

How to Renovate an Old Orchard?—There is a "previous question" in this case—"is the orchard worth renovating?" should be first considered. This can not be properly decided by one who has not seen the trees. When trees are very old and badly decayed, with trunks and larger branches more or less hollow, it is not worth while to expend labor upon them; the wood-pile needs them. But if merely badly shaped, and, though sound, are unfruitful, it will generally be a profitable investment to restore them. The

What to Do, will vary with circumstances. Often putting down a few rows of drain tiles, with the necessary pruning, will be all that is needed to overcome the original mistake of the planter, who set his trees on land not good enough for the usual farm crops. Many of the bad orchards never could have been good with any above-ground care. If the soil was good, the now suffering trees have been starved. The great want is food; supply it by

Manuring the Soil.—Such orchards generally are in grass. Spread a heavy coat of manure over the whole surface, and turn over the sod in the spring. When the sod has decayed, then give a deep plowing, and spread ashes if they can be obtained, or a good dressing of lime, and harrow. Thus far we have attended to the roots. The above-ground portions need care. The trunk and larger branches are usually covered by scales of old bark, growing upon which are mosses and lichens, and hidden beneath them the eggs and chrysalids of insects.

Scraping the Bark with a short-handled hoe will remove a portion, but to make a complete job, use strong home-made soft soap, made from ley or potash. Thin this with enough water to apply readily to the bark, and leave the rain to do the rest. Do this work of scraping, etc., early in the spring.

Pruning will generally, if not always, be needed. How, and how much, will depend upon the state of each tree. Endeavor to open the tree to let in light and air all through it, and also to bring the head to a well balanced shape. It may require the removal of some large branches and the shortening back of others. This may be done at the end of winter; cover all large wounds with some dark-colored paint. If large ragged wounds have been made by the breaking down of branches, dress the cut by the use of a drawing knife or stout chisel, to make a clean, smooth wound and paint it. We have assumed that the variety of fruit is good. If the tree is sound, but of a worthless variety, renew it by

Grafting.—The manner of renewing an old tree by grafting it over to make a new head, must be left until next month's Notes.

Planting Orchards.—One contemplating planting an orchard, should first determine to do well by the trees, by giving them the first and sole right to the ground. An orchard poorly kept is a bad investment. Next, use great care in selecting the varieties of fruit. Do not make too long a list.

Varieties of Apples.—A dozen varieties is ample, and may be thus divided; two early, four autumn, and six winter kinds. Of course the number in each division will be governed somewhat by individual taste, and whether the fruit is solely for home use or for market. It is difficult to give a list of varieties that will suit all persons and all localities. The following may be of some aid to

those about to make a selection. *Early*—Red Astrachan, Early Harvest, Golden Sweet, Williams' Favorite. *Autumn*—Gravenstein, Porter, Maiden's Blush, Duchess of Oldenburg. *Winter*—Rhode Island Greening, Red Canada, Golden Russet, Ben Davis, Northern Spy.

Varieties of Pears.—For orchard planting, the list may be: for *Early*—Doyenne d'Eté, Manning's Elizabeth. *Summer*—Bartlett, Clapp's Favorite, Beurre Giffard. *Autumn*—Beurre Hardy, Doyenne Boussock, Seckel, Duchesse d'Angouleme, Belle Lucrative. *Winter*—Winter Nelis, Lawrence, Vicar of Winkfield, Dana's Hovey.

Peaches.—In every peach region, the selections for market vary with each locality. The following is a good selection for home use: Early York, Early Crawford, Old Mixon Free, and Smock.

Cherries.—Early Richmond, Black Tartarian, Coe's Transparent, are the leading varieties.

Quinces are often put in some out of the way, low, wet place, and they often give fair fruit in spite of it; they should have as good soil and culture as any fruit, and when thus treated, few fruits are more profitable. The old Apple or Orange Quince is best known, and good. Rea's Seedling is very fine, and a new Connecticut variety, Champion, gives high promise.

Purchasing.—By all means purchase of reliable nurserymen, that you may be sure of good stock, and trees true to name. Other things being equal, it is best to buy as near home as possible, as there is less danger of injury in transportation.

Insects.—The clusters of eggs of the Tent Caterpillar are most conspicuous now, and should be found and destroyed. They are always glued in a band near the ends of the small twigs, and are best seen in dull weather.

Protection.—Young trees must be secured against the attacks of rabbits by smearing the trunks with blood, or by placing common laths around the trunk, and fastening them in place with wire. In deep snows, mice may work beneath the surface, and gnaw the bark—to prevent this, tread the snow down firmly about the trunk.

Manure may be drawn out and spread in the orchard at any time. When the snow is on the ground a sled can be used with advantage, being lower than a wagon, and passing more easily under the trees.

The Fruit Garden.

For the benefit of the new readers, it may be said that under the "Fruit Garden," we include what are generally known as *small fruits*—the various berries, grapes, dwarf pears, etc. The fruit garden ought to be a reality on every farm, large or small, for the enjoyment it gives, and the health, and even profit which it brings when well cared for—giving a succession of delicious fruits from the time strawberries come until the late grapes are gone. It is an unpleasant fact that the fruit garden is much neglected on many farms. With the good resolutions of the new year, we hope that many will resolve to set apart a portion of ground to be devoted to the culture of small fruits.

Soil.—The soil of the fruit garden should be rich and well drained, that it may be loose and allow of a free circulation of air, and not permit water to stand upon or below the surface.

Manure of the best quality should be used.

Strawberries.—The list is so large that a novice is bewildered in making a selection: Charles Downing, Seth Boyden, Monarch of the West, Duchesse, Forest Rose, and Sharpless, are all good. On heavy soils the old Triomphe de Gand and Jucunda.

Raspberries.—Braudywine, Cuthbert, Herstine.

Black Caps—Amer. Improved, Mammoth Cluster.

Gooseberries.—Downing, Houghton.

Currants.—Versailles, White Grape, Red Dutch.

Blackberries.—Kittatinny, Snyder, are the best.

Grapes.—Concord, Wilder, Delaware, Brighton, Telegraph; Iona and Catawba, where they succeed.

Kitchen and Market Garden.

This is a department of the *household* and the *farm*—falling under the two heads and joining them closely together. As is the Kitchen Garden, so is the dinner; and as the dinner, so the health, the disposition, and the general comfort of the household. Aside from the needs of the family table, Kitchen Gardening, in many localities, may be made to pay. If a person is living near a manufacturing town, many things, like cabbages, turnips, green corn, peas, etc., may often be grown and sold with satisfying profit. There are many cases where persons thus engaged have realized greater returns from the garden than from the whole farm. There is nothing *small* in growing peas or cabbages, if they pay better than field corn or wheat. It will pay in many cases to look closely into this matter. It must be borne in mind that, as a general thing, the products of the garden are perishable, and the first condition of success is a near market.

Manure is the foundation of good gardening; it is the food out of which plants, as factories, and the sunshine as the force, make the good things for the table. During the winter all the manure, and of the best quality, that is possible, should be made and *saved*. It is one thing to make manure, and another to save it. Be sure and do *both*.

Leaves may be collected at any time during the winter when the ground is clear of snow. They make the best of litter, and act as an absorbent of liquid manure, while they are rich themselves.

Cold Frames.—It is to be remembered that the plants in the cold frames should not be kept so warm that they start into growth. If such is the case, when a cold snap comes, the young growth is killed down, and the plants ruined. When the temperature is above 30° the sashes should be raised.

Hot-beds will be started in the Southern States during this month. At the north the sashes, etc., should be put in order so that everything may be in readiness when the hurrying time of spring comes.

Roots put away in trenches will need some additional covering as the cold increases.

Seeds should be looked over and a list of those wanted made out and sent to the seedsmen. Order early, and thereby get the better attention.

Implements.—See that they are put in good order.

Flower Garden and Lawn.

The work here will be mostly in preventing injury to the trees and shrubs from heavy snows, and the lawn from being trespassed upon by careless drivers. Evergreens will catch a great amount of snow and bend and break beneath the weight if not relieved; it is best to shake off the snow soon after it falls, while it is loose and light. If the snow is deep, it may be necessary to dig it away from the long, lower limbs of large evergreens. That all persons driving into the grounds in winter may keep in the drives, a number of poles may be set along the roads, and if this is not thought sufficient, a wire may be stretched between them. It is a difficult matter for "fast" people to keep in the right path just after a heavy snow has fallen. The adornment of the surroundings of the house is a subject that most of us will do well to consider. Plan now for new walks and drives. Consider the planting and select the shrubs, herbaceous plants, the flower seeds for annuals, and order early.

Greenhouse and Window Plants.

This is the season when in-door plants should be showing at their best, and it is the holiday season for the greenhouse, when all without seems lifeless.

Bulbs for forcing should be brought out from the cellar, and watered sparingly until they start into new growth.

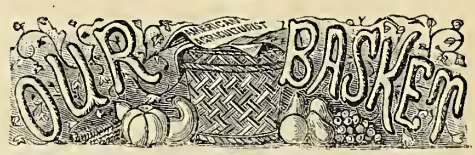
Annuals.—Sow seeds of Candytuft, Sweet Alyssum, Mignonette, and other annuals, for later blooming.

Insects, living as they do upon the juices of the plants, are a constant source of injury if not at once removed. The Red Spider may be kept off by thoroughly drenching the foliage, especially on the under surfaces, with water once a week or so. House plants, especially, suffer from the Red Spider, and also from accumulated dust, because their owners think they need "syringing," as usually directed, and this they know is not practicable in the dwelling room. Syringing is a quick and convenient method of washing the plants, but by no means the only one. Take the plants to the bath-tub, lay the pot carefully on its side, and then use the watering-pot, holding it high, so that the fine streams will descend with force, and so direct them that they will strike the undersides of the leaves. Set the plants upright, and let them finish dripping before taking them back to their places. If the bath-tub is not at hand, the kitchen-sink will answer as well. The Mealy Bug and Scale may be removed by hand-picking, or by the use of a brush and strong soap-suds. A wash of Tobacco Water is most effectual with the lice, or Green Fly; fumigation with tobacco smoke is used in greenhouses, and allows of wholesale application; this is not so practicable in the house, and tobacco water diligently applied answers as well.

Worms in the pots are often a source of serious trouble, but can be removed by turning the ball of earth out of the pot, when the worms will generally be found upon the surface of the ball and may be caught. If *clear* lime-water, enough to saturate the earth, be applied, it will kill the worms, and not injure the plants. An hour or so after applying the lime-water, water abundantly with common water.

Watering.—The soil should be kept moist and loose, that there may be a good circulation of air, not alternately soaking wet and powdery dry.

Window Plants should have special care when severe weather comes; take them from the window to the middle of the room, and cover with a sheet or other cloth, or with paper during the night.



containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Too Important to be Overlooked.—While most of the Premium Articles offered by the Publishers are desirable, there is one proposition that demands careful consideration and action, on account of its far-reaching public benefits. We refer to the arrangement for supplying a Circulating Library of few or many Books, agricultural, horticultural, on animals, etc., including also many of the best Standard Works on other subjects. The details of the plan are simply as follows:

Any ten or more persons, even up to a hundred or more, in any neighborhood or town, can, by uniting and contributing $1.50 *a piece, not only secure the American Agriculturist for each person during* 1880, *but also as many Dollars' Worth of Books as there are members in the Club or Association. These books, put in charge of one of the members, from time to time, can circulate from one to another until all have read them, and then be kept as a library for reference by all interested. It only needs some enterprising public-spirited person in every town or neighborhood to secure a large valuable collection of books for general use.*

Even where there are a large number of subscribers already for 1880, *there are still remaining enough others to secure quite a library. Of course any person desiring can himself collect the subscriptions, and secure the books as his personal property. Many have done this. It is desirable, however, in this way, to secure a library for public use.*

For any School, Public or Private, there is not the slightest doubt that a most valuable and useful acquisition would be a good COMPOUND MICROSCOPE. The wonderful revelations of this instrument would awaken great interest on the part of both teachers and pupils, give them a new, now unseen, world of objects to think about, and be very useful in many ways. The high cost and delicate machinery of good instruments of this kind have placed them out of the reach of most ordinary Schools hitherto. The new, most valuable and effective Compound Microscope devised and brought out the past year, and supplied at less than a quarter of the cost of any equally serviceable instrument previously available, puts it within the reach of every school. Several Boards of Public School Trustees have already appropriated the $10 and purchased one—all others would be warranted in so doing. But it can easily be obtained

by the Teacher or some of the pupils, by getting the sum in subscriptions of 10 cents to $1 among the patrons. (In most districts, if the patrons of the school were aware of its usefulness, there would be found ten who would contribute $1.50 each, which would not only secure the Compound Microscope for the School, but also the *American Agriculturist* during 1880, for *each* one subscribing $1.50. Or the teacher migbt collect the snbscriptions and receive the instrument himself or herself.)

The Premiums

All Available to Every One

This Month.

Every Reader is invited to look over the grand list of Premiums, including no less than **338** desirable articles of various kinds, besides **847** choice Books, which include many Standard Works from the leading Publishers. (If any one has not received the Descriptive Premium Sheet, or has it not at hand, he will be supplied by sending a Postal Card request for it.) The Articles and Books offered were secured early last year, before the great rise in prices, and so far as they are exclusively for Premiums, the Publishers' contracts hold good during the continuance of the present Premium List. The Premiums range all the way from small articles for sending single *new* subscriptions, up to $150 articles, and every person can secure some one or more of them now. We believe the present number of this Journal, if shown to non-subscribers as an earnest of what the Volume for 1880 is to be, will prove attractive enough to secure their subscriptions, and every one who takes a little trouble to present the paper to others, and invite such subscriptions, will be entitled to the premiums offered.

The Sliding Gate.—"M. J. S.," Butler Co., Pa. On reference to the *American Agriculturist*, for Dec., 1879, page 521, it will be seen that the so-called "Lee patent," on the common sliding gate, and another known as the "Teal patent," have been brought into court in Michigan and defeated, the court having decided that these patents were illegal. This is a sufficient answer to give to any person claiming a patent right fee for the nse of any such gate. Thousands of dollars have been fraudnlently collected under these illegal patent claims.

The President's Message in what it says of the financial position of the nation, its peaceful relations at home and abroad, our abundant harvest, and all other things relating to our material prosperity, will meet with a hearty response from every thoughtful person. But the President says other things, with which we cannot agree, and makes recommendations which ought not to be adopted. In spite of the deplorable figure our Government makes, so far as it has gone into the business of agriculture, he proposes to extend it, and to add divisions of Forestry, and of Veterinary Matters, to the present Department of Agriculture. Even Presidents do not appear well, when they talk on subjects about which they know little, and we regret that a message which begins so well, should have so lame an ending.

Disease in Fowls.—"J." When the head and eyes of fowls swell, and fetid matter comes from the nostrils, the disease is Roup. It may be cnred by washing the head, mouth, and nostrils, with warm vinegar, and dressing the nostrils and throat with a soft feather dipped in a solntion of onc dram of Sulphate of Copper (Blue Vitriol) dissolved in a tea-cup full of water.

Books on Orcharding and Gardening.—We are often asked by those who would select some book as a guide in the different departments of horticulture, which one of several will best answer their purpose. Perhaps we can aid to a selection by enumerating the leading works in each branch of horticulture. For the Orchard, from starting trees in the nnrsery, planting and general management, no other work is so full and complete as the "Frnit Garden," by P. Barry. It is unfortnnate that the title does not convey an idea of its full scope. It describes select lists of fruits of each kind. For a list and descriptions of nearly all known varieties, Downing's "Fruits and Frnit Trecs of America" is hest for reference. In Small Fruits, "The Small Fruit Culturist and Grape Culturist" by Fuller, and Roe's "Manual of Small Fruit Culture." For Market Gardening, "Gardening for Profit," by Peter Henderson; "Money in the Garden," by P. T. Quinn; "Farm Gardening and Seed Raising," by F. Brill, is a most nscful work, and the only one of its kind. For the Flower Garden, "Breck's New Book of Flowers" is still the favorite with those who follow old-fashioned gardening. "Practical Floriculture," by Peter Henderson, is suited to botb the professional florist and the amateur—and "Gardening for Pleasure" by the same author is intended for those who wish one book to tell them all that they wish to know on fruits, vegetables, and flowers. Tbere are many other works, which will be found in the advertised book list.

Extermination of Willows.—"J. P. T.," Rio Grande Co., Col., asks: "How can Willows and their roots be most easily destroyed?"—Our native Willows, as a general thing, grow where they are most needed, along the banks of streams, where they render most valuable service in keeping the banks from being washed. Those which are above ground, mere bushes, have very long, far-reaching roots, and often of much greater diameter than any of the stems. In clearing land it is desirable to leave this natural barrier to the encroachments of the water. But to exterminate them from land which it is desired to clear, is our friend's qnestion. He says that cntting them with the axe is most tedious work, and asks if any implement is made for the purpose. There are bill-hooks, an old-fashioned implement for clearing nnder-growth; the brush scythe, a short, thick, and heavy scythe, made for the work indicated by its name; then there are implements made especially for tropical countries, the "machete" and cane-knives, very heavy, long-bladed knives that are most effective in the hands of those accustomed to them. Among these no doubt something can be found that will make more rapid work than the axe, which will still be required for the larger Willows. A grub-hoe shonld be used for the roots, and when all of these that is practicable are removed, there will be a continous sprouting from what remains in the soil; these may be kept down by goats, or perhaps by sheep.

Atavism, what is it?—"A Reader." When an animal possesses any peculiarities not found in its parents, as of form, color, disposition, etc., but common to grandparents some generations back, it is said to have obtained them by *atavism*. It is the cause of croppings out of characteristics in distant descendants; or to put it in another way, a reversion to an older form.

Fastest Time—An Interesting Table.—

Year.	*Horse.*	*Time.*	*Year.*	*Horse.*	*Time.*
1810..	Boston Horse....	2.48	1867..	Dexter	2.17¼
1833..	Confidence	2.36	1871..	Goldsmith Maid.	2.17
1834..	Edwin Forest...	2.31½	1872..	" "	2.16¼
1845..	Lady Suffolk....	2.29½	1876..	" "	2.15
1849..	Pelham	2.28	1874..	" "	2.14
1853..	Highland Maid..	2.27	1878..	Rarus	2.13½
1859..	Flora Temple....	2.19¾	1879..	St. Julian	2.12½

Eating Shot.—The London *Lancet* cantions those who eat game, to be careful and not swallow the shot by which the animal was killed, as serions results have followed taking Lead into the system in this manner.

A Horse in Poor Condition.—"C. T.," Kent, Iowa. A horse that is in poor condition, and troubled with worms, will probably be relieved by a dose of one pint of Linseed Oil, given even every third day, for three times, then give weekly a pint of the Oil, with one ounce of Spirits of Turpentine. Feed bran mashes, boiled oats and potatoes, giving them slightly warm.

Jack Rabbits.—"O. B. O." writes that four years ago parties in Kern Co., Cal., imported greyhounds from England, for the protection of their crops, there being "millions" of the pests in that and adjoining counties. The statement would have been more complete, had he told us what success attended the experiment.

To Utillze Straw Without Stock.—"L.P.F." Charles City, Iowa. When stock are not kept by which straw can be made into manure, it is well in many cases to spread the straw over the fields and let it rot, or plow it in—preferably the latter, for if left loose upon the surface it wonld probably blow into heaps.

Cotton Seed and Linseed Cake.—Dr. Lawes estimates the *manurial* value of these two concentrated foods, at $29 per ton for the former, and $23 for the latter. This is more than the market price of cotton-seed meal with us at the present time. Does this not appeal to the American stock feeder, to nse these concentrated foods more abnndantly!

Bran as a Food has not been fnlly appreciated. The laxative tendency does not produce any unsatisfactory resnlts, provided the bran is fed as it should be. A slight laxative condition of the bowels is better than the constipation that a lack of sucb food produces. Besides, the bran is rich in phosphates, so essential to the development of healthy stock.

The American Agricultural Association.

Last month we announced that the preliminary steps had been taken towards tbe formation of an Agricultural Society which should be truly national in its scope and membership. The meeting for final organization was held in New York December 10tb-12th and was quite as largely attended as the most sanguine friends of the enterprise could have expected, while the assemblage was of a character such as one rarely sees brought together. Indeed, the gathering was a remarkable one for the solidity and dignity of its members, it being composed, with few exceptions, of men of middle age. The first day was devoted to preparatory work, and in the evening the meeting was addressed by Prof. A. R. LeDoux upon the "Adulteration of Seeds," and by Dr. M. Miles on "The Correlation of Forms in Animals," abundantly illustrated by the aid of one of McAllister's fine stereopticons. On the second day the elcction of officers took place, which resulted as follows: *President*, John Merriman, of Maryland.—*Vice Presidents at large*, N. S. Townsend, Ohio; Moses Humphrey, New Hampshire; J. C. Stevens, Ohio; J. B. Bardwell, Maine; G. Gregory Smith, Vermont; David Taggart, Pennsylvania; E. H. Hyde, Connecticut; John Scott, Iowa; George H. Cook, New Jersey; Ashbel Smith, Texas; C. V. Riley, District of Columbia.—*Vice Presidents*, L. L. Polk, North Carolina; Dr. Henry M. Ridgley, Delaware; C. W. Thompson, Minnesota; S. D. Gillett, Illinois; Daniel Needham, Massachusetts; Edward D. Pearce, Rhode Island; J. W. Avery, Georgia; Ezra Whitman, Maryland; John D. Adams, Arkansas; D. Wyatt Aiken, South Carolina; Governor George F. Drew, Florida; F. T. Francis, Alabama; Governor Alcorn, Mississippi; Colonel J. B. Killebrew, Tennessee; Cassius M. Clay, Kentucky; J. Floyd King, Lonisiana; Roger W. Woodbury, Colorado; John Bidwell, California; S. G. Reed, Oregon; John P. Jones, Nevada; Henry G. Davis, West Virginia; General Gilbert S. Meem, Virginia; Claude Mathews, Indiana; Chester Hazen, Wisconsin; H. G. Wells, Michigan; J. H. Scofield, Kansas; D. H. Wheeler, Nebraska; Prof. G. C. Swallow, Mo., and Lawson Valentine, New York.—*Directors for one year*, N. F. Sprague, Vermont; P. M. Pulford, Maryland; Thomas M. Holt, North Carolina; T. E. Gould, Illinois, and J. N. Colcman, Missouri.—*Directors for two years*, Major Alvord, Massachusetts; A. L. Kennedy, Pennsylvania; J. T. Henderson, Georgia; ——McGrath, Kentucky; ——Trumpy, Michigan; J. B. Grinnell, Iowa; Powell Clayton, Arkansas.—*Directors for three years*, Governor Fred Smyth, New Hampshire; General N. W. Curtis, New York; Robert Beverly, Virginia; M. J. Lawson, Ohio; William S. King, Minnesota; Henry Hubbard, Colorado; General A. T. A. Torbert, Delaware. Mr. J. H. Reall was chosen *General Secretary*, and Lawson Valentine, of N. Y., *Treasurer*. The Board of Directors appointed an Executive Committee, to consist of: The Senior Vice-President, N. S. Townsend of O., and others.

The principal addresses on the second day, were by Professor C. V. Riley, of Washington, on Agricultural Advancement in the United States, and by Prof. W. O. Atwater, of Wesleyan University, Middletown, Ct. Both gentlemen took occasion to compare our government's efforts on bchalf of agriculture, as manifested in the seed-shop at Washington, with the unostentatious, inexpensive, but wonderfully efficient methods of European governments. On the third and last day the Society was addressed by Prof. X. A. Willard on The Dairy; Prof. W. H. Brewer, of Yale, on Science and Agriculture; Peter Collyer, Chemist to the Department of Agriculture, Washington, on Sugar from Sorghum and Corn Stalks. The concluding address was by the Hon. J. B. Grinnell, of Iowa, who gave a very enthusiastic and patriotic address on agriculture in general. We look upon the beginning of this Society as a success, and as full of promise. An excellent spirit pervaded the meetings, which we trust may be found in all future sessions of the Society.

The American Dairymen's Association will hold its 15th Annual Convention at Syracuse, N. Y., January 13-15. An attractive programme is sent us, containing the subjects of addresses by Prof. James Law, E. W. Stewart, G. C. Caldwell, L. B. Arnold, and others. All Dairymen are earnestly invited to be present and participate in the work of the Convention.

Manure a Product of Feeding.—We wish to call the attention of all readers to the above point, as set forth in Professor Atwater's article. Read it carefully.

Hatching Codfish.—Professor Baird's attempts in hatching codfish have been successful, and the Commissioner hopes to re-stock the waters of New England—waters where formerly this valuable fish was abundant.

Pine Cones for Kindlings. — When dry, the cones from pine trees are excellent for starting fires; they so abound in resin that a small amount answers.

Agricultural Stations and Departments.

In an address before the "American Agricultural Association," on Dec. 12th last, Prof. W. O. Atwater gave an account of the European Agricultural Experiment Stations, and then contrasted our so-called Department of Agriculture with these useful institutions. Among other things he said:—"In 1876, the annual expenses of the *Sixty Six* German Experiment Stations was $156,750. Fifty-two per cent of this came from Governments, 17% from societies and public-spirited individuals, and 31% from fees for analyses. According to the report of our Commissioner of Agriculture for 1878, the running expenses of our Agricultural Department from 1839 to 1878, forty years (exclusive of double this sum for cost of printing and buildings), were over $85,000 per year; total, **$3,404,754.13.** The current expenses of the last three years are: 1877, $174,686.96; 1878, $188,640.00; 1879, $204,900.00. The current expenses for 1878 included for salaries, $65,640.00; for collecting statistics, $15,000.00; for laboratory, $1,000.00; for purchase and distribution of seeds, $75,000,00. Roughly speaking, we may say that the system of accurate experimenting in agricultural science, whose results we have been considering, dates from about the same time as our Agricultural Department, although the Experiment Stations commenced a dozen years later. No exact figures of the whole expenses of the European Experiment Stations are attainable. It is safe to say, however, that they have cost the Governments very much less than our Department of Agriculture has cost us—*i. e.*, less than the current expenses of the Department. The printing of the Reports costs as much or more than the current expenses. That is to say, either item, Current Expenses or printing of Reports, has cost the U. S. Government more than the European Experiment Stations have cost their Governments. The best information—nearly all the definite, accurate information we have of Agricultural Science has come from this European work. How much has come from the U. S. Department, everybody knows. "*Look on this picture and then on that.*"

The Prussian Government pays for its thirty Experiment Stations which include the most productive ones in all Europe, almost exactly the same sum per annum that the U. S. Agricultural Department has almost uselessly expended for *the purchase and distribution of seeds.*

The Second International Dairy Fair.

In January last, we gave an illustrated account of the Dairy Fair held in Dec., 1878. Though this was an impromtu affair, its success was such that an Association was formed, which is now, Dec., 1879, holding a second exhibition. As we go to press, the Fair is in its fourth day, and yet all the details are not complete, much of the machinery is not in working order, and as the judges have not made their awards, the names of competitors are not placed upon their exhibits. The boy who boasted that he knew how butter was made, said: "You take a long kind of pail, and swash a stick up and down in it. Then you want a cow." We will, as a "condition pecedent," put the cow first, and say that the exhibition of dairy stock is very much larger than at the former exhibition. The greater share of the animals are placed in the "Machinery Annex," and we think it a mistake not to have had all in the same place, as one can better compare the animals when close together, and the confined air of the main room, where the butter and cheese are to be judged, would have been free from that animal odor which cows, however choice and however well cared for, will give off. To begin with the cow. The largest number is exhibited by William Crozier, of Northport, L. I., who has in all 37 head, in which the Jerseys predominate; but there are also Ayrshires, and Gurnseys, including besides cows, bulls and heifers, and all the way down to the four-weeks calf. Some of the animals have a remarkable record. One of the bulls seems to us a perfect specimen of the Jersey breed. James Nielson, New Brunswick, N. J., exhibits about a dozen Duteh cattle, which he has labeled "Holsteins," although no such breed is known in Holland; his pens include a very fine bull, with the appropriate name "Taurus." Dr. A. D. Newell, of the same place, has some fine Jerseys, and so has John J. Holley, of Plainfield, N. J. S. M. D. Wells, Wethersfield, Conn, sends representatives of his noted herd of Ayrshires; Harry A. Weed, Stanford, Conn., and his neighbor W. H. Walmsley, both show fine Devons for which they claim excellent milking qualities, and that they will turn off as excellent beef animals; F. W. Decker, of Dutchess Co., N. Y., has Shorthorns, two of the cows being white.

In Cheese, Messrs. H. K. & F. B. Thurber & Co., whose pyramid we noticed last year, confront the visitor as he enters, with an obelisk of this edible, 40 feet in hight, built up of cheeses of various kinds, and embellished by quaint mottoes. The next most conspicuous object is the pyramid of bags of salt erected by F. D. Moulton & Co., of which it is not necessary to say more than it is "Ashton's Factory Filled." W. W. Ingraham, of Jefferson Co., Wis., has a handsomely arranged pyramid of red and white cheeses. A very attractive exhibit is one of imitations of the various European styles of cheeses by Roethlisberger & Gerber, New York; here are cheeses in all possible sizes, shapes, and colors. We notice that the Limburger is placed under glass, a rather frail inclosure for so *strong* a subject. Butter thus far is labeled by States, but the names of the makers will be given when the awards have been announced. Dairy appliances, in the way of churns, to the very last step in packing and marketing, are numerous almost to bewilderment. It is interesting to note the great variety of devices for accomplishing the same end: the simple act of setting cream is made the subject of several inventions, while churns are proverbially endless in styles. It would occupy pages to give even brief mention of these "appliances." The machine for separating cream by centrifugal force, was not yet ready for operation at the time of our visit; much is expected from this application of centrifugal force in the creamery, and it is thought by many that it will effect a *revolution* in butter-making in a double sense. Whitman, Burrell & Co., Little Falls, N. Y., have a cheese factory in full operation; it forms a most attractive feature of the fair to city visitors, who naturally have a curiosity to see how so generally an article of food is prepared.

Sundry Humbugs.

As the present number of the *American Agriculturist* will be read by many thousands we have never before addressed, we would say a word to them. The exposure of frauds, especially those upon farmers and rural residents, has been for many years a regular department of the *American Agriculturist.* It was nothing of our own seeking, but grew up spontaneously from the necessities of the case. By far the larger share of the schemes intended to defraud country people, have their origin in cities, especially the City of New York, and it was very natural, when these were presented to the rural readers of this paper, that they should appeal of us, as we were in most cases the only persons in the city of whom they could inquire as to the proposed schemes. From small beginnings our correspondence relating to Humbugs has grown up to be something formidable; the amount of labor it entails is only compensated for by the abundant assurance, which comes to us from all quarters, of the great utility of our exposures.

WHAT IS A HUMBUG?

We use the word "Humbug" as a convenient term for every scheme to obtain money or its equivalent without making a fair and proper return, as well as for every other form of imposition and cheating. A very comprehensive term it is, as the devices it includes are well nigh innumerable, and as the ingenuity of rascality is by no means exhausted, new forms of humbugs are constantly demanding our attention. While those who have long been readers of the *American Agriculturist* understand the matter, it may be well for us to say to new friends that this column is conducted solely with a view to

THE GOOD OF THE COMMUNITY.

It can not be made a medium for the settling of private grievances, and it will be of no use to send us a request to "show up so-and-so as a humbug" unless accompanied by full evidence that the party accused is worthy of a place in such select company... There is perhaps no other subject upon which we receive so many letters as

SPECULATIONS IN STOCKS.

We had said all that was needed upon this matter, but many new readers have recently joined our circle, and frequent letters come from those who have not seen what has been stated. The country must be flooded with the circulars of parties who are, or who call themselves, "stock brokers." These present the case in a most persuasive manner; they show how a small sum may become large, and a large one larger, by handing it over to the senders of the documents. Our letters of inquiry almost invariably ask as to the character of the parties sending the circulars, asking if they will "do as they agree to do." It is impossible to give a "confidential answer" to any letter of inquiry, and we must here

REPLY TO MANY LETTERS

by saying that we have no little personal knowledge of any of the senders of the circulars, we have no reason to doubt that most will "do as they agree to do."—Let any one not infatuated by the idea of making money rapidly, read these circulars, and see how little they "agree to do," except to take the money sent and speculate with it. The character and business responsibility of the parties are not in question with us in our objections to

THESE STOCK SPECULATIONS.

We advise our readers to avoid them, not because of the parties who carry on the business, but because of the character of the business itself. The fact that many barkeepers are totally abstinent men does not prevent opposition to liquor-selling. The opinion of the best business men, bankers, and merchants of all kinds, is, that the kind of stock speculation proposed in the circulars referred to is pernicious in its influence, that its effects upon those who practice it are similar to those of gambling, and that in the interest of

SOUND BUSINESS PRINCIPLES

it should be discountenanced and suppressed. Regarding success in such speculations as only more unfortunate than losses, on account of the infatuation it encourages, we have uniformly discouraged our readers from engaging in any of the schemes, no matter how attractively they may be presented, or how great the prospect (or hope) they present of sudden gain.

LOTTERY SCHEMES IN CONGRESS.

The consternation among lottery men, caused by the enforcement of existing laws has been already mentioned. The Post-master General has in the second week of its session caused to be presented to this Congress an amendment to the law as it now stands, which covers the defects of that law, and facilitates the exclusion of lottery matters from the mails. The lottery people are to make an appeal to Congress, and present their grievances; watch the votes when the bills come up, recollecting that the lottery chaps have money in plenty, and it is a question to them of life and death. Watch the votes! But if lotteries are to be excluded, why not the stock speculators, which offer the lottery, only in another form? Do not make fish of one and flesh of another.... J. G. B., St. Louis, Mo., sends us a remarkable circular of a

"PASTOR-I-AL COLLEGE."

Now this is not, as some may suppose, anything like a theological school where pastors are educated—no—this "Pastor-i-al College" guarantees "in a course of thirteen weeks, to teach any man of ordinary ability the business of raising cattle and horses, sheep," etc., etc. Now here's a college as is a college. It underscores the important assertion—"*We do not teach from books*"—probably not, and with good reason. It looks very much as if the aim and object of this circular was to sell a work for 75 cents. ....Last month we gave the manner in which

ROGUES WELCOME STRANGERS.

There are gangs of rascals who hang about the streets leading to the principal depots, ferries, etc., to overhaul strangers, and they actually watch for their prey upon Broadway in broad day light. Their method is to pretend to know the stranger, be glad to see him, get at once into his confidence, and on one pretence or another, such as showing samples, etc., get him into some place where they can fleece him. Incredible as it may seem, this game is frequently successful. Soon after giving an account of this matter last month, a case was reported in the daily papers, in which a clergyman from Illinois fell into the hands of these chaps. One who pretended to know him induced him to go into a place to see some samples of tea. Here were several friends of the tea-man. One of these complained that he had lost a sum of money at cards, the others laughed at him, the minister "reasoned" with him, remarking that "he did not see how he could be so foolish."—"But did you ever see the game played?" said Scamp.—"Never," said Parson.—"Well, I should just like to show you how it was done. Have you any money?" — "Yes, 40 or 50 dollars," said Parson. — Such was his anxiety to understand the matter that he

ACTUALLY PUT DOWN HIS MONEY

for two of the rogues to show how the game was played. They played, and in a short time one of the rogues won all the parson's money and put it in his pocket. Of course, that was the last of that money. There was a row, arrests were made. Parson could not give bail for his appearance at the trial, and was locked up in the House of Detention—which is the next thing to a jail—with a prospect of remaining there until the trial, some two months off. Moral:

AVOID ALL ADVANCES OF STRANGERS,

if you are a stranger yourself in a strange city, especially in New York.... The "Chicago Tribune" has been showing up the operations of a chap with a

"MAGIC BONE DISSOLVENT"

not a dissolvent for converting dead bones into superphosphate, but for curing spavin, curb, ring-bone, "within thirty-six hours, without breaking the skin." Quackery in horse medicine, is not so rare a thing, but we were attracted by the name "Horton." Could it be *our* Hor-

tou, he of the wonderful "Stump Extracting Powder." To be sure, the Chicago Horton was a "C. G.," while our Horton was a "W. V.," but the difficulty of finding *any* Horton, the presence of some one else to answer questions in both cases, lead to the fearful suspicion, that one who was on so familiar terms with lightning, as to cause it to come up a wire with "a pinch of salt on its tail," and annihilate a veteran stump, would be able to convert a "W. V." into a "C. G."....In Chicago, where the great interest is grain, and they make "corners in corn," they play their little games of

PUTS AND CALLS IN WHEAT

after the manner that is done on stocks in New York, and the business there, as in New York, is done by parties who find their customers at a distance from the city, and among the rural population, or "grangers," which is the slang name of the city papers for farmers.

THE BIBLE AND DICTIONARY OFFERS,

notwithstanding that it was long ago exposed, is still carried on by parties near New York, though the originators of this scheme, in small places, have been stopped long ago. The plan is to advertise a dictionary worth $5 or $6, for 35, or 54 cents. In the cases that have come to our knowledge, the book sent has not been worth in the trade, as much as 25c. wholesale. If, in cases like this, people would recollect, that really valuable things are never sold for less than they are really worth, such games could not last. When the parties who advertise these $6.00 Dictionaries for 35 cents, actually send the book they really advertise, one gets near his money's worth; the fraud is in representing the book as a Six-Dollar one.—A "wounded bird" in Brooklyn, who applied to himself our hit at this misrepresentation in May last, tries very hard to strike back by sending on his postal card a statement that his "little hook" is worth so much more than the publications of O. J. & Co. Keep on doing so, Mr. Blank, if it does you any good. We never object to such free advertising ...When an article is offered for *much less* than its real value, it is safe to conclude, that its value

IS NOT AS REPRESENTED,

or that there is some object in making the offer which is not apparent. It is safe to let alone all articles, that, like these dictionaries, are offered at less than a tenth their *alleged* worth.....A chap in Philadelphia, offers a "New Domestic Bible." He describes a large Bible, the contents, number of engravings, size of pages, and all that, and claims it to be "as good as those sold for $15 in any book store," and says: "To introduce our Bibles, we agree, upon the receipt of $1, to pay the postage and other expenses, to send *a* copy of the Holy Bible" etc. This is too thin.....We have already had batteries of many sorts, but never before have we had the

"MINIATURE BATTERY."

A long circular in very fine print, tells all about it. The pictures are only three, but telling. One is a man, or the upper part of him, heavy as to beard, and nothing as to clothes, with one of these batteries right over his breast-bone, and he don't seem to mind it a bit. The second is a picture of the earth; that respectable old planet is being badly struck by just the crookedest kind of lightning. The third is a picture of the Battery, "of the exact size," which is that of half a dollar. The "Professor" who has this miniature Battery, is down upon all Electric Chains, Belts, and Bands—and we should think he would be—for they give down only common, plain electricity, old-fashioned lightning as it were, but this Battery is up to the times with a new sort, the

REAL GIMLET-POINTED LIGHTNING!

This, absurd as it may seem, is an actual claim; we are told that the Professor said: "That the various blocks of metal were so placed, that when the electricity was formed, it would be *formed in gimlet shape*, and he said it would enter the system in that form, and *pass on twisting*, until it spent its force." Yes, the lightning is not only "gimlet pointed," but it goes on a "twistin." On the whole, we prefer the old style. Yet people will read nonsense like this, and believe it. Boyd, you are the worst electrical humbug yet. ...In medical matters, the

RECIPE NUISANCE

seems to be the most prominent. We would say to our newer readers; if tempted by the advertisement of any young fellow, whose "sands of life are fast running out," or any "retired missionary," or any chap who met a missionary in foreign lands," or of any one else, to send for his or her recipe,

DON'T!

This recipe business is one of the meanest forms of quackery. The chaps offer a Recipe. It will be entirely in unmeaning jargon, or all the articles but one or two will be well known things, but these, the most important will be names, unknown to medical, or any other science. The chaps inform the person to whom the recipe is sent, that said articles are very difficult to obtain, that druggists never have them fresh, (nor at all, as their "ain't no sich") and that they, at great trouble and expense, have imported a lot of the "Original Jacobs," which they will put up for the sufferer, at what will barely cover the cost —$3 or $5.—We would say a word to our new friends,

ABOUT ADVERTISING DOCTORS,

which may save them some trouble in writing to ask our opinion of this or that one. We regard every doctor who advertises that he can cure this or that, especially those who warrant a cure, as an enemy to the public welfare, and to be avoided. We do not know any of them, and advise every one to keep clear of all of them. Moreover, every medical compound, the composition of which is kept secret, we regard as dangerous to the public welfare, and instead of being taken by the people should be *taken* by the police and destroyed; as our laws are not up to our needs in this respect, we can only advise every reader of the *American Agriculturist*, to let everything of the kind entirely alone.

LATER—ABOUT STOCK GAMBLING.

We have alluded above to the general excitement on the subject of stock speculations, as indicated by the numerous letters to us. It seems to be an all-pervading mania, and it is said that even women participate in this form of gambling. A recent paper states that one lady's operations were far from encouraging. She gave her broker $1,000 with which to operate; her investment brought her nothing, but the broker brought in a bill for $5,000 for his commissions. This looks like a large story, but it appears in a commercial paper of good standing. A friend who knows about such matters informs us that the extent to which the country people are engaged in these speculations is astounding; they are known in

THE SLANG OF THE STREET AS "THE LAMBS,"

and the knowing ones talk of "shearing" their country customers. A farmer of our acquaintance has called in to request us to present our warning with still greater force. He says that a neighboring farmer, who, in spite of his warnings, has engaged in the "put and call" business, has just been sold out under a chattel mortgage made to those from whom he borrowed money to speculate with, in the vain hope of getting back that which had gone before. It is the same old, old story; when one once becomes infatuated with the desire to get rich suddenly, by some lucky chance, whether in the lottery, or by stock gambling, he is already on the high road to ruin. To those who have become engaged, ever so little, we say, stop short. To those who are hesitating on the edge, we say: Touch not! The motto appropriate to all the avenues to Wall street is:

"Let him who enters here leave Hope behind."

Shape of Meat-Producing Animals.—The best animals for producing meat are those with large and healthy organs of nutrition, and sufficient room near by for the storing away of the meat. These two and other reasons determine that the best meat-producing animals are built on the plan of a square when viewed from before or behind, and a parallelogram in side view —or what is called the "rectangular type."

Self-Sharpening Horse Shoes.—By the simple expedient of rolling a steel plate in the center of the iron from which the shoe is made, the calks of the shoe have a hard steel center, and as the soft iron wears away by use, the sharp steel is left to prevent slipping. The manufacturers, Messrs. Shoenberger & Co., of Pittsburgh, Pa., send us a part of a shoe that was worn all winter, which shows the effect of wear in exposing the steel center. Those who travel upon icy and frozen roads know the difficulty of keeping the horses properly "sharp," especially if they live at a distance from a blacksmith; with a set of these shoes, the animal is prepared for all weathers, and can travel and work more effectively than when in danger of slipping, and with greater safety to the driver. The firm make self-sharpening shoes of the ordinary form, and also the "Snow-shoe Pattern" in which the shape is such that the snow can not ball upon the animal's feet.

Ensilage: Silo Opening.—The first Silo in America, built on the French plan, of M. A. Goffart, was opened at "Winning Farm," J. W. Bailey, proprietor, Billerica, Mass., on Dec. 3, last. This Silo, or fodder pit, is 40 feet long, 12 feet wide, and 16 feet deep, roofed, and having a capacity of 500 tons. It was partly filled with green corn stalks, cut by an ensilage cutter, the pieces being 4½ inches in length. After this cut fodder had been thoroughly tramped down by men, a layer of straw, 12 inches thick, was spread over it all, and the whole covered closely with planks, upon which about 50 tons of stones were placed. This was done early in October. At the opening of the silo, the fodder was found to be in an excellent state of preservation; at first a little sour, but in a short time this sourness passed away, and when fed to cattle or sheep was eaten with a relish. A number of agriculturists and members of the press were present, in fact, the "opening" of the silo was well attended, and voted a success.—Mr. Bailey is so well pleased with his experiment that he will practice this method of preserving green fodder in a green state to a larger extent the coming season. Others have also expressed their intention to erect silos at an early date. This is one of the most important of recent improvements in agriculture, and one which every one who raises corn fodder should investigate before the next crop is harvested.

A Safe and Handy Knot.—It frequently happens that a rope, strap, or even string, breaks, and it is necessary that the parts separated should be securely fastened together. One of the best methods of tying a

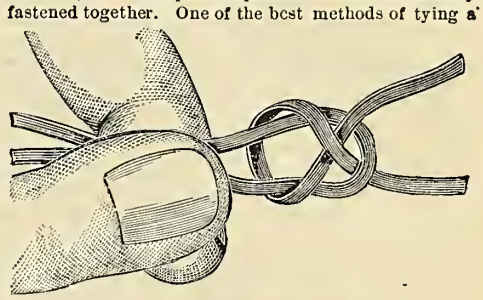


Fig. 1.—TYING THE KNOT.

firm knot consists of forming a loop of one broken end, after which the other portion of the rope is passed through it, as shown in figure 1. If the rope or strap is long, the same knot may be tied by passing the broken

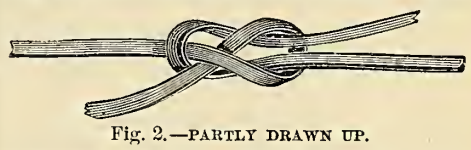


Fig. 2.—PARTLY DRAWN UP.

end under, and then around the loop, and under itself, thus saving the trouble of drawing the whole length of the rope through the loop, a back-handed way of arriving

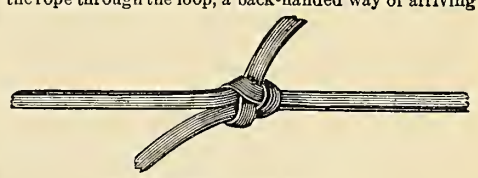


Fig. 3.—THE COMPLETE KNOT.

at the same result. This knot when tied, and still loose, is as shown in figure 2; when drawn up tight, it is as in figure 3. This knot is especially adapted for tying pieces of harness, halters, etc.

Twin Lady Apples.—Our notice of twin apples last month, reminded Mr. W. W. Young, Jefferson Co., Ky., that his Lady Apple trees frequently bore twin fruit, and sends us three specimens of this doubling. He thinks the variety given to producing such freaks, as he frequently finds them in picking the fruit. We quite agree with him when he says, "We consider it about Christmas a very fine apple."

Hardened Glass, from which great things were expected, has been but little mentioned of late. Recently, in view of the great losses by hail in England, it is proposed to use the Bastie, or hardened glass, in greenhouses and for other horticultural buildings.

Hard-Pan—What is It?—"M. E. C." Soils are divided into three classes: *Surface Soil*, *Subsoil*, and *Hard-pan*. The surface soil is the upper portion and that which is turned by the plow; in fact, the soil that interests the farmer most. The subsoil is below the surface soil, more compact and often of a different color. Sometimes the line between the surface and subsoil is quite distinct, but generally not. Hard-pan is a still harder layer than the subsoil, and lying below it. This hard stratum may be but a short distance below the surface, while in other places it is not to be found. It is a very hard soil, or one that is approaching the nature and texture of a rock.

Michigan State Farmers' Institutes.—The State Board of Agriculture has decided upon the times and places for holding a series of Farmers' Institutes for 1880. There will be six such gatherings for lectures and discussions, held at widely separated points in the State, during the month of January. The Professors of the Agricultural College will take a prominent part in the meetings, two or more of them are to be present and give addresses at each Institute.

Largest Yield of Wheat.—The Territorial Fair Association of Montana has awarded the first premium for the best acre of wheat, the yield being **102** bushels. This is believed to be the largest known yield of wheat.

Hired Help in Winter.—The average farmer—that is, one with 150 acres devoted to mixed husbandry—if he has no large boys, can generally find employment for one hired hand through the winter. There are many things that he can do as well as in summer, if not better, as the getting out of timber, rails, the year's fire-wood, and doing much shop-work, if he is handy with tools. In this way a man can be kept the year round and constantly on hand with very little more expense and much more comfort than to hire a new hand each spring.

American and English Agriculture as seen by English eyes. The average yield of wheat in Great Britain is 28 bushels per acre. Estimating rent, interest on capital, outlay for manure and labor, and the crop costs £8 per acre. "The Western farmer who has £2 sterling invested in his soil and its equipments, his expenses per acre would be somewhat as follows:" Interest on capital, 4s.; plowing, 10s.; seed, 6s.; reaping and binding, 10s.; threshing and marketing, 2s.; total, £1, 12s. The fourteen bushels (which is the average) of wheat will give a return of 42s., or a profit of 10s. per acre. "Two years' profit thus moderately estimated would purchase the fee-simple of much of the land in the Western States." The American farmer under the circumstances has much the larger margin of profit. "The American of a certain type has an instinctive aversion to the pursuit of an unprofitable calling; he has a wonderful capacity for accommodating himself to circumstances. If wheat-growing does not pay he tries dairying or gardening, and failing that, will cut down lumber or split rails, keep a store or 'run a hotel,' or even make politics his profession." The English writer claims no such smartness and versatility for his farmers, and does not expect it, as they are "not to the manner born."

Pleuro-Pneumonia.—From the English agricultural papers we learn that this dreaded and destructive contagious disease is breaking out in various parts of Great Britain. One grazier in Surrey has lost 44 head, and the authorities have ordered the immediate slaughter of the rest of the herd. One farmer in North Staffordshire was fined £10 for removing the remainder of his cattle to an adjoining farm. "Strong measures are being adopted to stop the infection."

Variety of Food.—It is a well established fact, that a single kind of food is not enough for the best growth, health, and comfort of animals. Like ourselves, the stock which we keep, *does* relish a change of diet—thrives better with a change of pasture so to speak—and gives fuller returns for the trouble of providing the variety of foods. Coarse fodder should be mixed with that which is of a finer nature; and the highly nitrogenous, fed with substances weak in nitrogen. Some farmers will feed their sheep corn one morning, and barley or oats the next, and thus keep up a continual surprise, hightened by a lick of salt now and then. It is the same love of change, which makes the colt, cow, and even the oldest horse feel glad when turned into a new field.

Treatment of Frozen Plants.—In times of the severe cold, the more tender plants in the window will sometimes be chilled and frozen. Such plants should not be put near the stove, to be thawed out; but kept where the temperature is a trifle above the freezing point that the thawing may be gradual, and in the dark, that deleterious chemical changes may not take place. If severely touched with the frost, it is best to remove the frozen parts, that new stems may be forced out from the buds below. Water freely, and finally bring them to the ordinary temperature for house-plants; 65 to 70 degrees.

Read the Market Columns.—The reports of Commercial Matters are made by experienced men, and with great care. These columns furnish much valuable information in the amount of various agricultural products, that have been bought and sold in the New York Market, and the comparisons with those of last year, are instructive. For example, under "Current Wholesale Prices," observe the advance in Potatoes, Timothy seed, Quinces, and especially in Apples. It will pay for all who have produce to sell, or to buy, to read the markets.

Wood Ashes.—The value of ashes as a fertilizer, depends principally upon the Potash and Phosphoric Acid they contain. The percentage of these varies largely, in ashes from different woods, varying from 10 per cent to 24 per cent for the former, and 4 per cent to 12 per cent for the latter. This would give not far from four to five pounds of potash to a bushel of ordinary mixed unleached ashes, which, reckoned at 4½ cents per pound—the present market value of potash in the commercial fertilizers—would give the value of a bushel as from 18, to 22½ cents. With due allowance for the Phosphoric Acid and the Lime—the latter making up the largest part of the ashes—it may be seen that a bushel of unleached ashes, is worth from 25 to 30 cents at the present time. Ashes, to secure the best results, should be thoroughly mingled with the soil. In this way, the best physical, as well as chemical effects are obtained. It is self evident that crops requiring larger amounts of Potash, will be the most benefited by the application of ashes, as the root crops, cabbage, tobacco, etc. Forty to fifty bushels per acre, is a good application.

An Extensive Country.—Not many days ago a prominent English agriculturist called at our office on his way home from a two months' *run* through some of our Western and North-western States. The feeling that was uppermost in his mind was the bigness of our country, and the large scale upon which everything is done by the American farmers. To use a familiar expression, he thought there were "millions in it," in rich acres, in bushels of grain, in heads of cattle, and in dollars for those who are at the work. Uncle Sam has in that snug little farm of his over *four hundred* million acres of land.

Root Pulp and Cut Straw.—As a matter of experience, it is found that the mixture of cut straw and root pulp, alternate layers of each, should stand for at least 24 hours before being fed, after which it becomes heated of itself, and the cattle eat it with great relish. There is nothing better for young and growing stock.

The Illinois Fat Stock Show.—The second annual exhibition of Fat Stock, held in the Exposition Building, in Chicago, was all that a large collection of the finest animals—horses, cattle, sheep, and swine, could make it. "Taken as a whole, in point of entries, in excellence and variety of the various classes, in the perfection of fattening, and in the attendance from day to day, this second annual exhibition may be called a most pronounced success, and will, it is hoped, be continued from year to year, until it really becomes what, in the outset, was intended to make it—the great National Show of the Fat Stock of America," During the show, a large specimen of each breed: Hereford, Shortborn, and Devon was slaughtered, with the following interesting results:

Part of Animal.	*Hereford.*	*Short'rn.*	*Devon.*
Gross weight.....	1,963	1,794	1,614
Head, "	55	47	49
Hide, "	106	90	95
Gut, "	113	97	95
Rough, "	178	155	145
Fore Quarters, weight...	725	611	552
Hind " " ...	592	568	503

It will be seen that the Shorthorn has the greatest proportion of more valuable parts. A series of such comparisons would be of great value to fatteners of stock.

Parent and Offspring.—"Which parent has most influence upon the offspring?" This is a question which is coming up every day, and one that is almost impossible to answer. It is now well established that a thorough-bred animal, that is, one bred in the same line or strain of blood, and has thereby had its characteristics fixed, has the greater control over the characteristics of the offspring, be the parent male or female. A Shorthorn bred to a Native will have the Shorthorn points predominant in the offspring. Other things being equal, the vigor of the parent, high constitutional development, or what we are pleased to call *vitality*, is claimed by breeders to have more or less weight in shaping the constitution of the offspring. It is claimed by some that certain functions and organs are determined by the male, while others are under the control of the female. Thus the external character—outward structure—is said to be due to the male, and the inward to the female—as, for example, a cross between a dog (male), and wolf (female), gives more external marks of the dog than when the sexes are reversed, but there is so little definitely known in this regard, that at the present time it can only be said that it is not satisfactorily established how far, and in what directions, each parent controls the offspring.

Old and Young Stock for Fattening.—If one but takes the trouble to look over the reliable, recorded experiments of the feeding of pigs, steers, and other stock, it will appear evident that it takes less food to produce the same increase in young, than old stock. Such being the case, beef and pork growers should make it a point to fatten their stock so soon as it is fully grown. The greatly superior quality of the meat, as well as its cheaper production, both encourage the practice.

Horn Buttons are now mostly made of the hoofs of cattle, and not of the horns as formerly. Cattle hoofs sell at the present time, for about $50 per ton. The products of neat stock are very numerous, and there is scarcely a particle of the whole creature that goes to waste.

Pampas Grass Plumes have become a regular article of trade with the florists and seedsmen, and are among the popular articles for the winter decoration of rooms. The Pampas grass, *Gynerium argenteum*, is a native of South America, and requires winter protection in the Northern States; it succeeds admirably in the Southern States, and reaches its greatest perfection in California, from which State the greatest supply is derived. C. A. Reed sent a sample a short time ago, showing how finely this grass developes its silvery plumes at Santa Barbara. This grass is dioecious, i. e. has its sexes in different plants; it is the pistillate plant which has the more showy plumes. In the climate of New York it may be preserved by placing a box or cask over it and filling that with leaves, placing on a cover to shed rain; it is worth this slight trouble as a large clump of the foliage is a stately object, even should it fail to flower.

(*Basket Items continued on page* 33.)

Bee Notes for January.

At this quiet season, so far as regards the operations of the apiary, it is proper for those who have not introduced the Italians into their hives, as well as those who are about to commence bee-keeping, to consider the claims made for superiority of the Italians over the ordinary, or black bees. In the first place, the Italian bees are much more beautiful than the black, a point not to be overlooked in the choice of *anything*, even if all the other qualities are equal. They are more prolific; the queens depositing more eggs than the native. The expert bee-keeper can distinguish the Italian eggs by the compactness with which they are stored in the combs. The Italians are more hardy than the natives, venturing out in colder weather, and doing work while common bees remain at home. They, therefore, swarm earlier, an important factor in bee culture—the hives become populous early in the season, thus securing a large working force by the time the flowers are ready for them. As a natural result from what has just been said, the Italians gather more honey than the natives. Again, they work upon plants that the blacks do not visit, which, of course, gives them a wider range for honey gathering. Cases are known where Italians were gathering white honey exclusively, while the common bees were working only on the Buckwheat. The Italians are notably fond of the Red Clover, and will gather much more honey from this plant than the natives, which derive but little from it.

As they are more vigorous than the natives, they are better able to protect themselves, and to defend their stores, being more watchful and swift to discern the enemy. If harshly treated the Italian is worse to handle than the native. This naturally follows from its superior vigor and more active disposition, but when treated kindly, experience has shown them to be more docile, and more pleasant to manage than the others. The honey-comb made by the Italians is more compact, and presents a finer appearance than ordinary comb, the difference being so marked that experts claim that they can tell the kind of bee that produced a given box of honey. Lastly, the Italians are much longer lived than ordinary bees. This has been proved in many cases, and is a strong characteristic in favor of the foreign bee.

A Test Record for Dairy Cows.

For some time past both the breeders and the purchasers of pure-bred, herd-book-recorded, dairy cows, have been convinced that something more is required to give substantial evidence of value than the bare pedigree of an animal entered in a Herd-Book. A few experts, who know the whole history of the best animals, may have been able to judge of the possible merits of a particular animal by her pedigree, but to the large majority of purchasers, the recorded entries were of no more significance than the hieroglyphics which Texan cattle-men brand upon the flanks of their cows. Mystery is always impressive. And though some people like to be mystified, the larger number of dairymen, who have kept pure-bred animals, have been greatly dissatisfied with the uncertainties of the Herd-Books. Recently some facts in connection with the shipment to the West, and sale there of some cows recorded in the Jersey Cattle Club Register, have opened the eyes of the purchasers of pure-bred cattle, for they have been assured by the best authority that although a cow may have been recorded in the Register, and her pedigree may be perfect, yet she may possibly be "a worthless brute." This shock to the confidence of persons who had a profound respect for "a record," has greatly helped the impression that something more is wanted to give the pedigree a meaning and a value; and that this need is a *record* of *performances* of the cows entered in the Herd-Book. It is proposed by some well-known and influential gen-

tleman to establish a system of tests of pure-bred dairy cows, to the end that their character, quality, and value may be associated in the record with their pedigree. Then, any uninitiated purchaser even, may be able to know as much from a perusal of the record as any expert, and a cow's genealogy will be accompanied by an authenticated statement of the accomplishments of her progenitors. Tbis seems to be all that is needed to make a record perfect, and we think it is a happy conception.

Science Applied to Farming, LIII.

Economy in Cattle Feeding, Composition of Foods, Feeding Standards and Rations for Farm Animals.

In last month's *American Agriculturist*, page 497, was given a Table of "*Composition, Digestibility, and Nutritive Values* of *Feeding Stuffs*, from a larger one by Wolff in the German "Farmers' Almanac for 1880." That table gave the average amounts of the food ingredients, albuminoids, carbohydrates, and fats eontained in different foods, and likewise the amounts of these that are, from feeding trials, estimated to be actually digestible. It is the digestible parts of the food that supply the wants of the animal, that are made over into flesh and fat, skin and bone, milk and progeny, and are used to produce heat to keep the body warm, and muscular power for work. It is with these, therefore, that we have mainly to do in feeding.

Feeding Standards.

Having noted how much of the nutritive ingredients our feeding stuffs contain, the next step is to learn how much of each different animals need for maintenanee and for production of meat, milk, work, etc. The German experimenters have studied into this matter very carefully, in two ways: first, by experiments, feeding animals with diffcrent kinds and amounts of food, and noting the effects; seeond, by observing the methods and results of feeding, as practised by the most successful farmers. On the basis of these two kinds of observations feeding standards have been calculated, as shown below. In brief, it has been found that full-grown oxen, at rest in the stall, can be kept for long periods in fair condition with food of sueh sort as to supply them, per 1,000 lbs. live weight, with 0.6 lbs. albuminoids, and 7.0 lbs. carbohydrates, in forms to be digested and taken into the circulation. It has been found well to have this supplied by 14–15 lbs. dry substance in the food. With rations furnishing these amounts of digestible ingredients, there has sometimes been observed a slight improvement, but perhaps oftener a small falling off in eondition. It appears on the whole, better to increase the ration, so as to give 0.7 lbs. nitrogenous, and a little over 8 lbs. non-nitrogenous nutrients, with a nutritive ratio of 1:12. It seems to make little difference in what forms these are given, whether in hay, straw, oil-meal, or otherwise, provided the food be wholesome and palatable. These materials suffice to make up for the wastes of the animal's body, to keep it warm, and to produce the small amount of muscular power needed when the animal is at rest.

If, now, the ox is to be worked or fattened, food for production of meat or force is required. Or if, instead of an ox, we have a milch cow, she will need food for produetion of milk, in addition to what is necessary to maintain her body in good condition. And this food for production must be not only larger in quantity, but different in quality; it must have a larger proportion of albuminoids,—as the German's say, the nutritive ratio must be narrower. Thus Wolff recommends for a daily ration for milch cows, per 1,000 lbs. live weight, 2.5 lbs. digestible albuminoids, 12.5 digestible carbohydrates, and 0.4 lbs. digestible fats, with a nutritive ratio of 1:5.4. This is just about what would be contained in 30 lbs. of fine quality, young, eut hay, or 120 lbs. of young grass, either of which would make a very good daily ration for a milch cow. The following table by Wolff, from the "Farmers' Almanac" referred to, gives feeding standards for various domestic animals. The first column gives the total amount of organic substanee—that is, the whole food, less water and ash, in the daily ration. The next three columns give the amounts of digestible albuminoids, carbohydrates, and fats. The fifth column, "Total nutritive substance," is the sums of the digestible nutriments in the previous three columns. The last column gives the ratio of albuminoids to earbohydrates, or the Nutritive ratio.

Feeding Standards.

KIND OF ANIMAL, WEIGHT, AGE, ETC.	Total organic substance.	Nutrative (digestible) substances.			Total nutritive substance.	Nutritive ratio.
		Albuminoids.	Carbohydrates.	Fats.		
A.—Per Day and per 1,000 lbs. Live Wright.	lbs.	lbs.	lbs.	lbs.	lbs.	as 1:
1. Oxen at rest in stall	17.5	0.7	8.0	0.15	8.85	12.
2. Wool sheep, coarser breeds.	20.0	1.2	10.3	0.20	11.70	9.
" " finer breeds	22.5	1.5	11.4	0.25	13.15	8.
3. Oxen, moderately worked	24.0	1.6	11.3	0.30	13.20	7.5
" heavily worked	26.0	2.4	13.2	0.50	16.10	6.
4. Horses, moderately worked	22.5	1.8	11.2	0.60	13.60	7.
" heavily worked	25.5	2.8	13.4	0.80	17.00	5.5
5. Milch cows	24.0	2.5	12.5	0.40	15.40	5.4
6. Fattening oxen, 1st period	27.0	2.5	15.0	0.50	18.00	6.5
" " 2d "	26.0	3.0	14.8	0.70	18.50	5.5
" " 3d "	25.0	2.7	14.8	0.60	18.10	6.0
7. Fattening sheep, 1st period.	26.0	3.0	15.2	0.50	18.70	5.5
" " 2d "	25.0	3.5	14.4	0.50	18.50	4.5
8. Fattening swine, 1st period	36.0	5.0	27.5		32.50	5.5
" " 2d "	31.0	4.0	20.0		28.00	6.0
" " 3d "	23.5	2.7	17.5		20.20	6.5
9. Growing cattle:						
Age. Average live weight, ⅌ head.						
2—3 150 lbs	22.0	4.0	13.8	2.0	19.8	4.7
3—6 300 "	23.4	3.2	13.5	1.0	17.7	5.0
6—12 500 "	24.0	2.5	13.5	0.6	16.6	6.0
12—18 700 "	24.0	2.0	13.0	0.4	15.4	7.0
18—24 850 "	24.0	1.6	12.0	0.3	13.9	8.0
10. Growing sheep:						
5— 6 56 lbs	28.0	3.2	15.6	0.8	19.6	5.5
6— 8 67 "	25.0	2.7	13.3	0.6	16.6	5.5
8—11 75 "	23.0	2.1	11.4	0.5	14.0	6.0
11—15 82 "	22.5	1.7	10.9	0.4	13.0	7.0
15—20 85 "	22.0	1.4	10.4	0.3	12.1	8.0
Growing, fat pigs:						
2— 3 50 "	42.0	7.5	30.0		37.5	4.0
3— 5 100 "	34.0	5.0	25.0		30.0	5.0
5— 6 125 "	31.5	4.3	23.7		28.0	5.5
6— 8 170 "	27.0	3.4	20.4		23.8	6.0
8—12 250 "	21.0	2.5	16.2		18.7	6.5
B.—Per Day and per Head.						
Growing cattle:						
2— 3 150 lbs	3.3	0.6	2.1	0.30	3.00	4.7
3— 6 300 "	7.0	1.0	4.1	0.30	5.40	5.0
6—12 500 "	12.0	1.3	6.8	0.30	8.40	6.0
12—18 700 "	16.8	1.4	9.1	0.28	10.78	7.0
18—24 850 "	20.4	1.4	10.3	0.26	11.96	8.0
Growing sheep:						
5— 6 56 "	1.6	0.18	0.87	0.045	1.095	5.5
6— 8 67 "	1.7	0.17	0.85	0.040	1.060	5.5
8—11 75 "	1.7	0.16	0.85	0.037	1.047	6.0
11—15 82 "	1.8	0.14	0.89	0.032	1.062	7.0
15—20 85 "	1.9	0.12	0.88	0.025	1.047	8.0
Growing, fat swine:						
2— 3 50 lbs	2.1	0.38	1.50		1.88	4.0
3— 5 100 "	3.4	0.50	2.50		3.00	5.0
5— 6 125 "	3.9	0.54	2.96		3.50	5.5
6— 8 170 "	4.6	0.58	3.47		4.05	6.0
8—12 250 "	5.2	0.62	4.05		4.67	6.5

Practical Application. Calculation of Daily Rations for Farm Animals.

To use the feeding standards, let us take some of the feeding stuffs in the table last month, and leaving out of account the water, ash, and total amount of the ingredients, note the amounts of digestible ingredients, as shown in the condensed table below.

Digestible Ingredients of Fodder Stuffs.

KIND OF FODDER.	DIGESTIBLE FOOD INGREDIENTS.			Nutritive ratio.
	Albuminoids.	Carbohydrates, including fibre.	Fat.	
I. Hay.	%	%	%	as 1:
Meadow Hay, poor	3.4	34.9	0.5	10.6
" " medium	5.4	41.0	1.0	8.0
" " very good	7.4	41.7	1.3	6.1
Red Clover, poor	5.7	37.9	1.0	7.1
" " medium	7.0	38.1	1.2	5.9
" " very good	8.5	38.2	1.7	5.0
II. Straw.				
Winter Wheat	0.8	35.6	0.4	45.8
Winter Rye	0.8	36.5	0.4	46.9
Oat	1.4	40.1	0.7	29.9
III. Roots and Tubers.				
Potatoes	1.1	22.8	0.2	21.6
Sugar Beets	1.0	16.7	0.1	17.0
Turnips	1.1	6.1	0.1	5.8
IV. Manufacturing and Waste Products, etc.				
Sugar Beet Cake	1.8	24.6	0.2	13.9
Malt Sprouts	12.8	51.6	1.7	4.7
Wheat Bran, coarse	12.6	42.7	2.6	3.9
Rye Bran	12.2	46.2	3.6	4.5
Linseed Cake	24.8	27 5	8.9	2.0
Palm Nut Ca e	16.1	54.4	9.5	4.9
Cotton-seed Cake	17.5	14.9	5.5	1.7
Cotton-seed Cake, decorti'd	31.0	18.3	12.3	1.6
Flesh Meal	69.2	....	11.2	0.4

Suppose now that I wish to feed my oxen that are standing in the stable doing no work, on medium quality hay and oat straw, and add enough wheat bran to keep them in good store condition. By the above figures there will be contained in:

	Albuminoids.	*Carbohydrates.*	*Fats.*	*Total.*
6 lbs. medium hay	0.32 lbs.	2.5 lbs.	0.06 lbs.	2.88 lbs.
12 lbs. oat straw	0.17 lbs.	4.8 lbs.	0.08 lbs.	5.05 lbs.
2 lbs. wheat bran	0.25 lbs.	0.8 lbs.	0.05 lbs.	1.10 lbs.
Whole daily ration	0.74 lbs.	8.1 lbs.	0.19 lbs.	9.03 lbs.
Standard ration	0.8 lbs.	8.0 lbs.	0.15 lbs.	8.85 lbs.

That is, 6 lbs. of medium hay, 12 lbs. oat straw, and 2 lbs. wheat bran, will furnish just about the quantities of digestible albuminoids, carbohydrates, and fats, that the standard per day for 1,000 lbs., live weight, requires.

My friend and former assistant, Prof. W. H. Jordan, of the Maine Agricultural College, has made use of the feeding standards above given, in calculating the following rations for various farm animals. It is not meant that just these proportions must be used. There are wide variations in the composition, digestibility, and flavor of the same feeding stuffs. So likewise the individual peculiarities of the animals, their size, condition, varying capacities for digesting, and more especially, for their food, differ greatly. Hence the rations need to be adapted to particular cases. The important thing is to mix the foods on hand, or to be bought, so as to secure the best results at the lowest cost. These are simply examples of mixtures that eontain the nutrients in about the proportions believed to be best adapted to the purpose. I cannot give what scems to me the right view of this system of calculating food-rations, better than in the words of a shrewd and intelligent German farmer, who has had considerable experience in their use: "As indieations of what is best, they are invaluable; to follow them blindly would be folly."

Daily Rations for 1,000 lbs. Live Weight.

A. Maintenance, Fodder for full grown, labor-free Oxen.

lbs. No. 1.	*lbs. No. 2.*	*lbs. No. 3.*
6 Med. meadow hay	5 Clover hay, best	6 Poor Timothy
12 Oat straw	18½ Wheat straw	17 Corn stalks
2 Wheat bran	½ Linseed cake	4 Corn meal
lbs. No. 4.	*lbs. No. 5.*	*lbs. No. 6.*
15 Oat straw	10 Poor Timothy	6 Clover hay, best
20 Potatoes	20 Sugar beets,	15 Oat straw
1 Cotton-seed meal	2 Corn Meal	

B. Fodder for Oxen at moderate work.

lbs. No. 7.	*lbs. No. 8.*	*lbs. No. 9.*
20 Good meadow hay	20 Medium Timothy	12 Good meadow
6½ Corn meal	2 Coarse bran	18 Oat straw [hay
	4 Corn meal	3 Linseed cake
lbs. No. 10.	*lbs. No. 11.*	*lbs. No. 12.*
12 Clover hay, best	12 Clover hay, good	10 Clover hay, best
10 Rye straw,	10 Wheat straw	14 Oat straw
22 Potatoes	7 Wheat bran	20 Mangolds
		1 Cotton-seed meal

C. Fodder for Oxen at severe work.

lbs. No. 13.	*lbs. No. 14.*	*lbs. No. 15.*
20 Best meadow hay	17 Clover, good	25 Medium meadow
10 Corn meal	3 Wheat bran	3 Wheat bran [hay
	10 Corn meal	3 Linseed cake

D. Winter Fodder for Milch Cows.

lbs. No. 16.	*lbs. No. 17.*	*lbs. No. 18.*
20 Best meadow hay	20 Good clover	17 B'st meadow hay
5 Wheat bran	20 Beet pulp	16 Corn stalks
3 Palm-nut meal	2 C'tton-seed meal	3 Wheat bran
		2 Cott'n-seed meal
lbs. No. 19.	*lbs. No. 20.*	*lbs. No. 21.*
10 Clover hay, best	20 Hungarian hay	20 Clover hay, best
15 Poor Timothy	20 Mangolds	2½ Wheat bran
20 Turnips	3 Wheat bran	50 Turnips
3½ Linseed cake	2 Linseed cake	
lbs. No. 22.	*lbs. No. 23.*	*lbs. No. 24.*
10 Best meadow hay	20 Clover hay, med.	20 Clover hay, best
15 Wheat straw	30 Mangolds	30 Turnips
5 Wheat bran	4 Malt sprouts	6 Corn meal
3½ Cotton-seed meal		

Fodder for Growing Cattle, one to two years old.

lbs. No. 25.	*lbs. No. 26.*	*lbs. No. 27.*
15 Med. meadow hay	20 Oat straw	15 Medium meadow
18 Rye straw	30 Turnips	20 Corn stalks [hay
2 Cotton-seed meal	5 Wheat bran	1¾ Meat scrap
	2 Cotton-seed meal	
lbs. No. 28.	*lbs. No. 29.*	*lbs. No. 30.*
10 Good clover	20 Poor meadow	20 Good meadow
10 Oat straw	20 Potatoes [hay	20 Mangolds [hay
8 Corn stalks	1½ Dry ground fish	5 Coarse wheat
2 Cotton-seed meal		[bran

G. Fodder for Fattening Cattle.

lbs. No. 31.	*lbs. No. 32.*	*lbs. No. 33.*
22 Clover hay, best	20 Medium meadow	20 Good meadow
8 Corn meal	10 Oat straw [hay	100 Pumpkins [hay
	30 Mangolds	3½ C'tt'n-seed meal
	3½ Cotton-seed meal	
lbs. No. 34.	*lbs. No. 35.*	*lbs. No. 36.*
20 Best meadow hay	22 Best meadow hay	15 Clover hay, best
30 Sugar-beet pulp	50 Turnips	10 Barley straw
2 Linseed cake	5 Corn meal	40 Mangolds
		3 Linseed cake

Fodder for Sheep, producing wool.

lbs. No. 37.	*lbs. No. 38.*	*lbs. No. 39.*
15 Clover hay, good	10 Medium hay	20 Pea straw
10 Poor hay	15 Bean straw	20 Potatoes
3 Oats	4 Corn	2 Cott'n-seed meal
lbs. No 40.	*lbs. No. 41.*	*lbs. No. 42.*
20 Oat straw	10 Best clover	20 Poor mead'w hay
30 Mangolds	10 Barley straw	6 Clover hay, best
1¼ Dried flesh	1½ Fish scrap	4 Corn

W. O. Atwater,
Wesleyan University, Middletown, Conn.

Fencing and Fences.

This important subject comes home to every owner of a farm or of a village lot that requires enclosure. At a meeting of New Hampshire farmers, several gentlemen publicly offered to sell their farms for less than what the existing fencing on them had cost. In a recent address at an Agricultural Convention, Mr. A.W. Cheever, editor "N. E. Farmer," said he had carefully gone over the statistics of farms, animals, crops, and cost of fences, and found that: "It takes, on the average for the whole country, $1.74 worth of fences to keep $1.65 worth of stock from eating up $2.45 worth of crops."

Fig. 1.

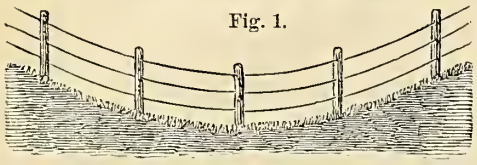


Fig. 2.

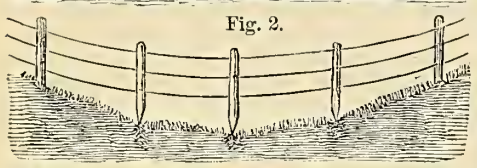
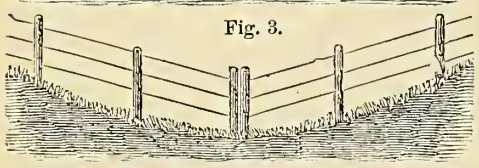


Fig. 3.



Nine years ago the statistics gathered at Washington showed that the fences then in existence, had cost $1,747,549,931. The additions since have raised the cost of the present fencing of the country to fully **$2,000,000,000.** A million dollars is a pretty large sum to count, or even to conceive of, (we can not count one million in the working days of a month, counting one a second and 10 hours a day), but here are two thousand such millions. The interest and repairs amount to over $200,000,000 a year, and the rebuilding of decaying fences nearly as much more, making our annual fence tax far more than the entire cost of the Army, Navy, the General Government expenses and Pensions, together with the interest on the public debt.

In N. Y. State, for example, there are some 75,000 miles of roads requiring 150,000 miles of fencing, costing over $40,000,000, and the total fencing in this single State has cost not less than $230,000,000.

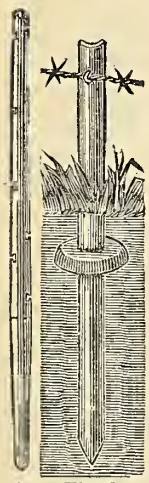


Fig. 5.

Fig. 6.

Fig. 7.

During 38 years past the *American Agriculturist* has had not a little to say as to the uselessness of a good deal of the fencing. But much will be needed wherever live animals are kept, and we propose now to direct some effort to reducing the cost of fencing generally. If this one item in the United States can be reduced only one-fourth, the saving will amount to $500,000,000. In the older States, there are an average of about two miles of fencing

Fig. 4.

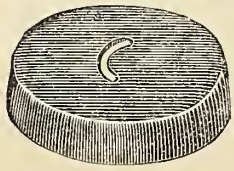


Fig. 8.

for each 100-acre farm, costing about $1 a rod, or $640. If, in building new fences and replacing old ones, we can erect them at ½ to ¼ the cost of the present fences, and have those that will last two, three, four or more times as long, and require but small annual repairs, the average value of farms will be enhanced some hundreds of dollars at least. If a narrow effective fence can take the place of the ordinary "worm fence," there will be a great decrease in the production of weeds and foul plants. Two miles of such fence on a farm, occupying a strip 8½ feet wide with its projecting corners, wastes two full acres of ground, worth $150, or more. The cost of Iron, and recently of Steel, are greatly reduced, and they have come into very largely increased use in ship-building, house-building, etc. Why should they not take the place of wood in all varieties of fencing, both for posts and rails? Such a change is already rapidly taking place.

More than 100,000 *miles* of *Barbed* Wire Fence have been recently erected. Whether this style of fencing is best, or desirable; whether it is too *barb*arous or not, for general adoption over our vast, timberless prairies at the West, and what forms can be adopted in our more thickly settled regions, for highway fences, for village lot enclosures, etc., will be the subject of examination and discussion in this and especially in future papers.

A Call for Information.

Many of our readers have the new barbed fences. We earnestly invite accounts of their experience and observation, *pro* and *con*. We have some letters denouncing barbed wire fences as too cruel to be permitted, and insisting that they should be prohibited by law along highways and railways. Others speak of their introduction as of inestimable value. Let us have all possible testimony on *both* sides of the question. Also any information and suggestions about *iron* posts.

Iron Fence Posts.

As there is a pressing need of new and improved forms of *Iron* Fence Posts, in order to call out information and stimulate invention in this direction, we will first briefly introduce this branch of the subject, by giving illustrations and descriptions of a few of the forms that have come under our own notice. The simplest form is an iron bar, or an iron tube, with holes or staples for attaching the horizontal wires. The same weight of iron is stronger in the form of a tube than in a solid bar. But cast-iron will be likely to be used generally. After securing sufficient *strength* of post above ground, the next points to be aimed at are *light weight*, on account of expense, and breadth of resisting surface in the soil to prevent swaying in any direction. Non-liability to heaving by frost is also an important point.

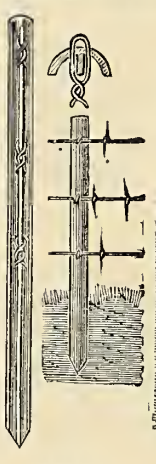


Fig. 9.

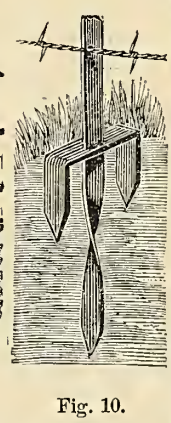


Fig. 10.

And just here we will introduce a matter referred to by a correspondent, who writes that a fatal objection to all forms of wire or barbed wire fence for uneven ground, is, that when the fence runs across a hollow or depression of the surface, as in figure 1, the contraction of the wire by cold lifts out the lower posts, as indicated in figure 2, even if the depression be only 2 or 3 feet, if the wires are tight. We suggest, as a remedy, two independent posts together at the lowest point, as shown in figure 3.

Various Forms of Iron Posts.

Andrew Turner, of Bellona, N. Y., writes us, describing a form of iron post, of which the exact form is not quite clear. He gives one suggestion that may be useful wherever there are plenty of stones of *so soft a texture as to be easily drilled*. During winter, or other leisure seasons, he drills holes in them of a size to admit the foot of the iron post, of whatever form, say 6 inches in depth. The stones are put into the ground any desired depth, and the posts inserted. The posts may then be of any iron pipe. We suggest using flat stones 3 to 6 inches thick, and drilling the holes *through* to let the posts extend some distance into the soil below.

John Cunningham, of Luzerne Co., Pa., sends us sketches of an iron fence post devised by him, to be made of cast or rolled iron, with double angles, as shown by the cross section at figure 4. The post, shown in fig. 5, has holes for 4 or 5 wires. The holes are made so as to receive the wires which are held fast by a key — in this case a common nail of proper size, driven above the wire. To prevent loosening by contraction and expansion of the wire, we suggest driving a nail from *each* side, one above and one below the wire.

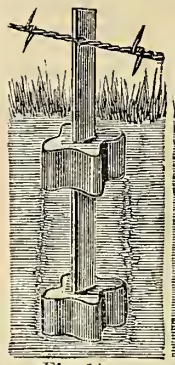


Fig. 11.

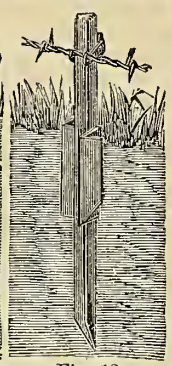


Fig. 12.

An iron post made by the Iowa Barbed Wire Fence Co., is shown at fig. 6. The bar of iron is ¼ inch thick and about 2½ inches wide, curved so as to stiffen it, (fig. 7). The wires are held on the outer curved side by staples over them to be clinched on the concave side. To hold the post firmly, a dise, (fig. 8), is sunk in the ground at any desired depth, and the post driven through the curved opening in it made to just fit the post. This dise is of 3/16 inch iron, 6½ inches in diameter, besides the edge of it, which is turned down 1½ inch all round.

J. C. Taylor, of Chicago, has an iron post (fig. 9) of similar construction to the above, but strengthened by a flange in the curve. This is driven into the ground without any boring. The method of attaching the wire is shown in the small cross section engraving at the top of figure 9.

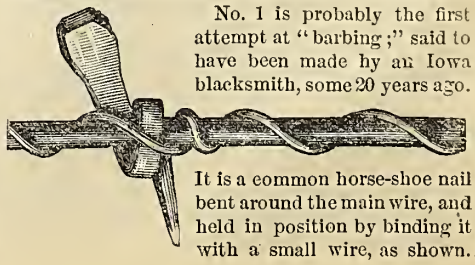
The Bullard iron fence post (fig. 10), made by the Washburn & Moen Manufacturing Co., is a flat bar slotted on one edge to receive the wires, and held by a forked brace driven into the ground.— Brick tiles of the form shown in fig. 11, are also used as support to strengthen this post. — The same company make a post of angle iron (fig. 12) which is braced in the line of strain. The wires are clamped by a keyed sliding holder, shown in figure 13.

Fig. 13.

The Barbed Wires.

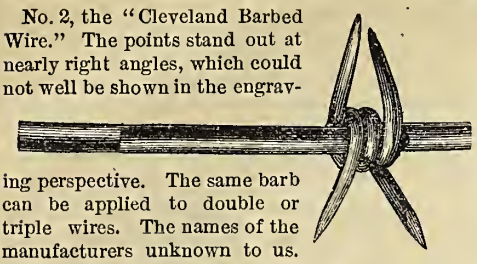
Many attempts have been made to imitate the natural thorn-armed plants, by affixing barbs to wire, and over 30 different patterns have been devised. We have some 25 specimens, the exact size and form of which are shown in the engravings below. Nearly all the fence wires here described, are now made of Steel, and most are supplied either painted (or japanned), or galvanized (coated with zinc). They average about 1 lb. per rod per wire, and usually cost 9 to 13 cents per pound.

The engravings are so exact that our readers can almost decide and make their own selection. We confess to being yet in the condition of a learner— but an earnest, investigating one, in behalf of the public. We started with a prejudice against any of the severer forms of barbs; yet some manufacturers say the demand is for the longest barbs, especially at the far West. We intend to learn more and say more on this, especially when we hear further from our readers experienced in their use.

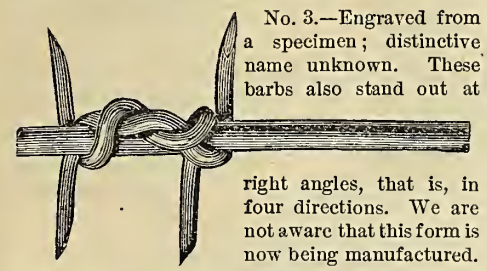


No. 1 is probably the first attempt at "barbing;" said to have been made by an Iowa blacksmith, some 20 years ago. It is a common horse-shoe nail bent around the main wire, and held in position by binding it with a small wire, as shown.

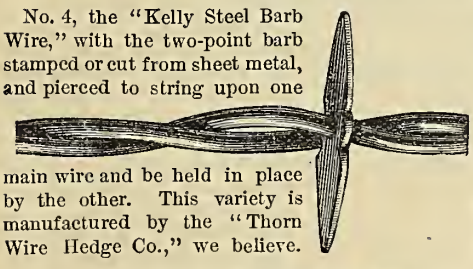
No. 2, the "Cleveland Barbed Wire." The points stand out at nearly right angles, which could not well be shown in the engraving perspective. The same barb can be applied to double or triple wires. The names of the manufacturers unknown to us.



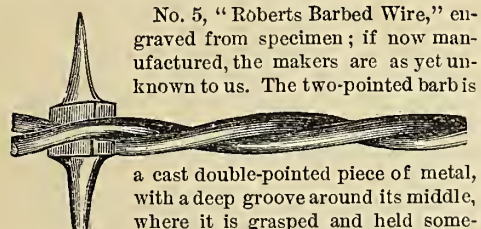
No. 3.—Engraved from a specimen; distinctive name unknown. These barbs also stand out at right angles, that is, in four directions. We are not aware that this form is now being manufactured.



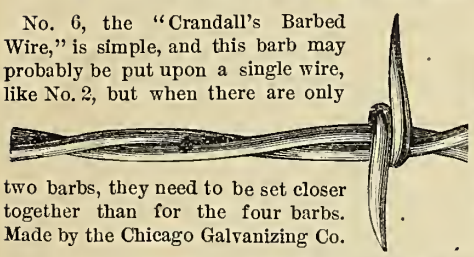
No. 4, the "Kelly Steel Barb Wire," with the two-point barb stamped or cut from sheet metal, and pierced to string upon one main wire and be held in place by the other. This variety is manufactured by the "Thorn Wire Hedge Co.," we believe.



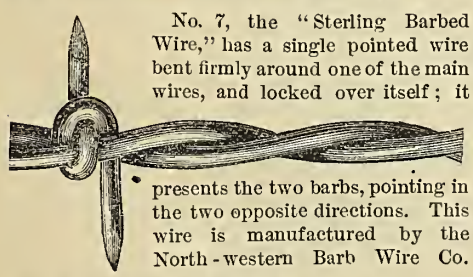
No. 5, "Roberts Barbed Wire," engraved from specimen; if now manufactured, the makers are as yet unknown to us. The two-pointed barb is a cast double-pointed piece of metal, with a deep groove around its middle, where it is grasped and held somewhat firmly by the twisted main wires.



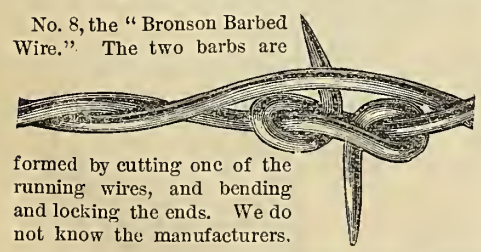
No. 6, the "Crandall's Barbed Wire," is simple, and this barb may probably be put upon a single wire, like No. 2, but when there are only two barbs, they need to be set closer together than for the four barbs. Made by the Chicago Galvanizing Co.



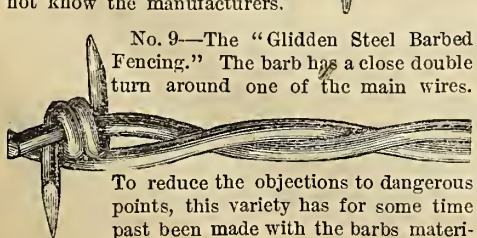
No. 7, the "Sterling Barbed Wire," has a single pointed wire bent firmly around one of the main wires, and locked over itself; it presents the two barbs, pointing in the two opposite directions. This wire is manufactured by the North-western Barb Wire Co.



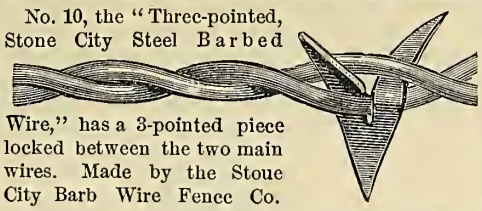
No. 8, the "Bronson Barbed Wire." The two barbs are formed by cutting one of the running wires, and bending and locking the ends. We do not know the manufacturers.



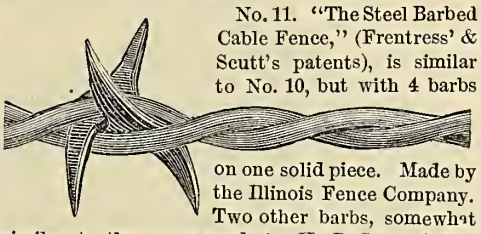
No. 9—The "Glidden Steel Barbed Fencing." The barb has a close double turn around one of the main wires. To reduce the objections to dangerous points, this variety has for some time past been made with the barbs materially shortened. Manufactured by the Washburn & Moen M'f'g. Co., as per advertisement elsewhere.



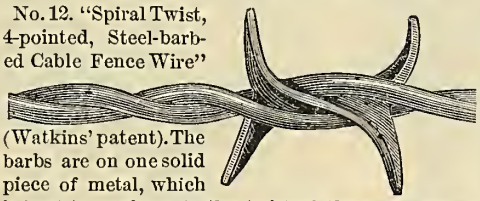
No. 10, the "Three-pointed, Stone City Steel Barbed Wire," has a 3-pointed piece locked between the two main wires. Made by the Stone City Barb Wire Fence Co.



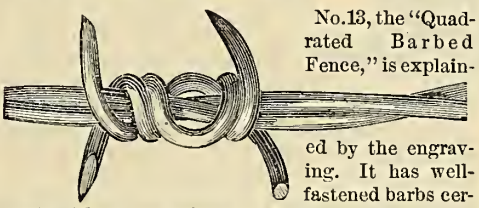
No. 11. "The Steel Barbed Cable Fence," (Frentress' & Scutt's patents), is similar to No. 10, but with 4 barbs on one solid piece. Made by the Illinois Fence Company. Two other barbs, somewhat similar to these, are made by H. B. Scutt & Co.



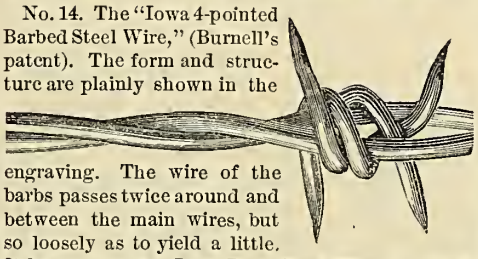
No. 12. "Spiral Twist, 4-pointed, Steel-barbed Cable Fence Wire" (Watkins' patent). The barbs are on one solid piece of metal, which is bent to conform to the twist of the main wires, and is thus held fast. Made by Watkins & Ashley.



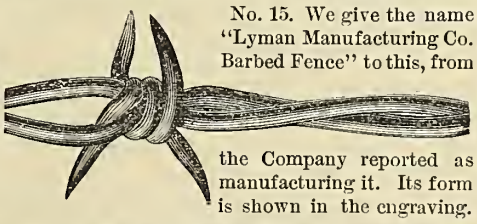
No. 13, the "Quadrated Barbed Fence," is explained by the engraving. It has well-fastened barbs certainly. Made, we believe, by Pittsburgh Hinge Co.



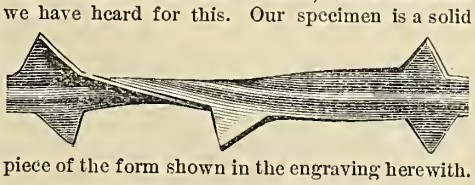
No. 14. The "Iowa 4-pointed Barbed Steel Wire," (Burnell's patent). The form and structure are plainly shown in the engraving. The wire of the barbs passes twice around and between the main wires, but so loosely as to yield a little. It is made by the Iowa Barb Steel Wire Co., both in Iowa and New York, as advertised elsewhere.



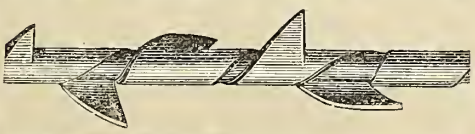
No. 15. We give the name "Lyman Manufacturing Co. Barbed Fence" to this, from the Company reported as manufacturing it. Its form is shown in the engraving.



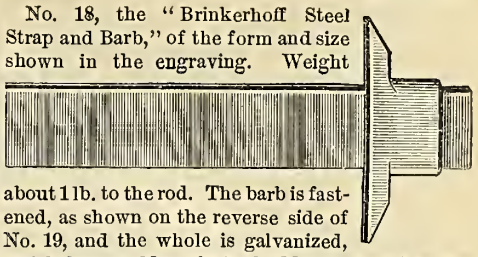
No. 16. The "Allis Patent Barb," is all the name we have heard for this. Our specimen is a solid piece of the form shown in the engraving herewith.



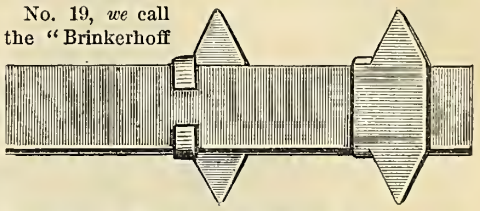
No. 17, the "American Barb Fence." A central, wire closely sheathed with a continuous metal strip, with its edges cut in the form of barbs, turned out in all directions, the points one inch apart. The whole is covered and saturated with paint or zinc, firmly cementing the outer and inner metal. Made by the American Barb Fence Co., (J. C. Taylor, General Agent), as advertised elsewhere.

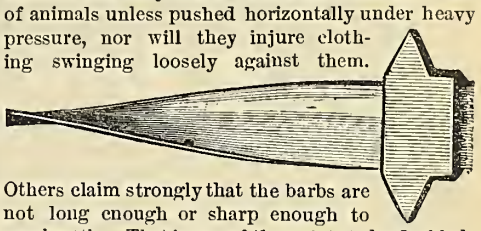


No. 18, the "Brinkerhoff Steel Strap and Barb," of the form and size shown in the engraving. Weight about 1 lb. to the rod. The barb is fastened, as shown on the reverse side of No. 19, and the whole is galvanized, which firmly solders the barb. Manufactured by the Washburn & Moen Mfg. Co., as advertised elsewhere.



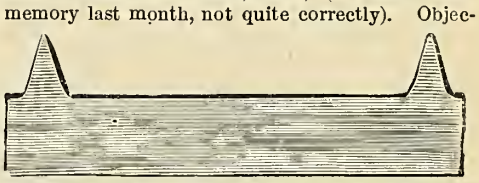
No. 19, *we* call the "Brinkerhoff Improved." This is the Brinkerhoff strap, same as No. 18, but the barbs, which were prepared *in this form* at our suggestion and request, project only about one-fourth of an inch, and the edges are so inclined that they will not catch and tear the skin of animals unless pushed horizontally under heavy pressure, nor will they injure clothing swinging loosely against them.



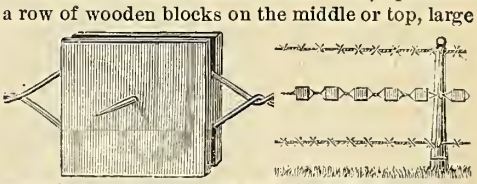


Others claim strongly that the barbs are not long enough or sharp enough to repel cattle. That is one of the points to be decided. Indeed, *the* leading question in the discussion now is, how much, or how little barbing is best, taking into account *effectiveness*, and *safety for animals*. No. 20 is a partial section of No. 19, which is introduced to show how it is twisted in putting up.

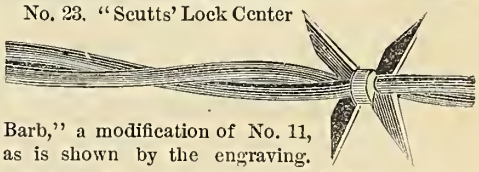
No. 21 is from the actual piece we brought from a fence at Beloit, Wis., (sketched from memory last month, not quite correctly). Objectionable from its too sharp barbs, and the expensive waste of cutting out the metal between the barbs.



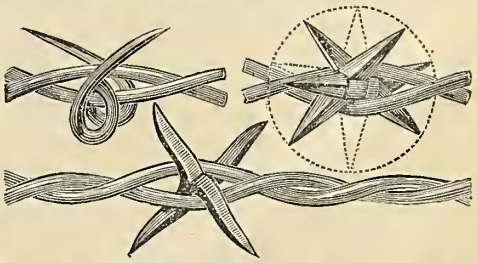
No. 22. "Scutt's Patent Tablet Wire," provides a row of wooden blocks on the middle or top, large enough to be readily seen by animals approaching.



No. 23. "Scutts' Lock Center Barb," a modification of No. 11, as is shown by the engraving.



Nos. 24, 25, 26.—"Lord's Rotary Barbs." The engravings show three different forms of these, in which the barbs are arranged to turn or revolve loosely in the wire. The claim is that they yield to the motion of the animal, and lessen the tearing.



Some other forms will be shown next month.

A House Costing $4,000, Complete.

BY S. B. REED, ARCHITECT, 245 BROADWAY, N. Y. CITY.

This plan is for a commodious, convenient residence, economically constructed with appliances for heating, ventilation, water, etc., complete.... **Elevation.**—(Fig.1.) The outlines are irregular,

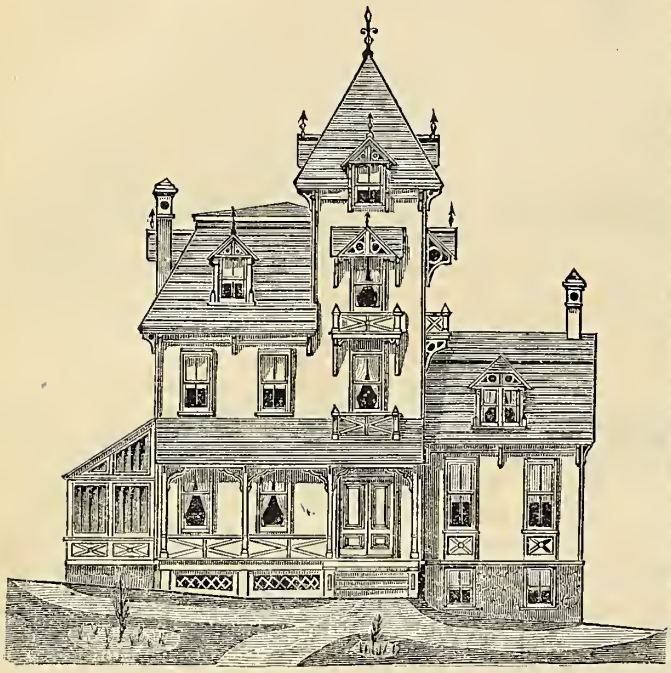


Fig. 1.—FRONT ELEVATION—FACING EASTWARD.

and agreeably conform to the site for which it is planned—an elevated, undulating and picturesque point, fringed with forest trees, and overlooking the waters. It fronts eastward, bringing the Conservatory on the warm, or southern side. The position of the tower, and its size, make it a prominent feature, and very valuable for an elevated outlook commanding extensive and interesting views. The aim is to have the exterior ornamentation neat and effective, and being mostly of open timber work, is simple of construction. The inclined grounds to the right bring most of the foundation above ground, and gives good sized openings to the finished basement.... **Cellar and Basement.**—(Fig. 2.) Hight of walls in main part 7 feet; in the kitchen end 8 feet, when floored 7 feet. That under the main part is for cellar purposes, to contain the furnace; bins for fuel and vegetables, with six small windows for light and air. The kitchen cellar part is floored and plastered, well lighted, contains a range, boiler, sink, wash tubs, and a force-pump. The pantry adjoining the kitchen is shelved on three sides, and has a dumb-waiter leading to the dining-room pantry above. The outside entrance to the kitchen and cellar is by the area at the rear. A convenient stairway leads from the front entry in the basement to the rear entry in the first story.... **First Story.**—(Fig. 3.) Hight of ceiling in main part, 10 feet;

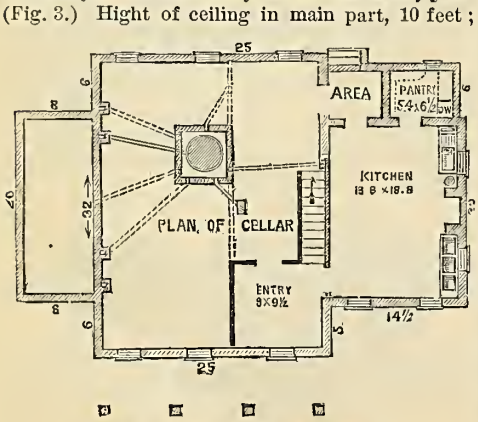


Fig. 2.—PLAN OF BASEMENT.

in the wing 9 feet. The principal entrance has double front and vestibule doors, to a large hall, 9⅛ by 18½ feet. Small closets at each side of the vestibule serve for umbrellas, overshoes, etc. At the left, double doors, leading to the parlor, and further on a door leads to the library, at the right, one to the dining-room, and one at the rear, to the back entry. The parlor is of ample size, and adjoins the library through sliding-doors. Each of these rooms has hard-wood mantels, is well lighted from without by large windows, and both have sash-doors leading to the conservatory. The latter is finished with a concrete bottom, and altogether costs but $150. By a little effort at selection and arrangement of plants, this apartment may be made a constant source of interest and pleasure. The dining-room has outlooks in three directions, and communicates directly with the porch, hall, the rear entry, and a pantry having a dumb-waiter to the basement. The rear entry is cut off from the main hall (to save the latter from much common use and wear,) and has a wash-bowl, and stairs leading to the basement. The rear porch, and dining-room pantry are both under a roof similar to that shown for the front piazza; the pantry extending to the outer face, forms an alcove of the porch. The main stairs to the second story are of the "quarter circle" pattern, with niche near the top, and have a 10-inch panelled newel; a 2¼ by 4½-inch moulded rail; and 2¼-inch fluted ballusters, all of hard wood.... **Second Story.**—Fig. 4.) Hight of ceiling in main part 9 feet; in wing 8 feet. The divisions are: a hall, three chambers, a bed-room, bath-room, and six closets, all of ample dimensions. Mantel shelves with trusses of hard woods are put in each chamber. The stairs to the

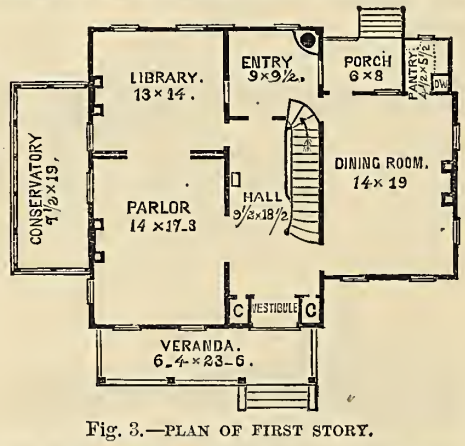


Fig. 3.—PLAN OF FIRST STORY.

attic are placed above those of the first story, which are thus made continuous to the upper hall. .... **Attic.**—(Fig. 5. Hight of finished ceiling 9 feet. This is divided into a hall, two chambers, a bed-room, and two closets. The stairs to the tower are "boxed in" with narrow, double-dressed beaded ceiling, and have a panelled door at the foot.... **Tower.**—Size of floor plan (not shown), 9½ feet square. Hight of side walls to top of plate 6 feet, and continued along the under side of the rafters at an angle of 45° to the ceiling, which is 9 feet high. The boxing of the attic stairs extends 2 feet above the floor, and has a moulded cap along the top.... **Construction.**—Foundation walls of hard brick and good mortar. Cellar bottom is levelled with concrete. The frame is of seasoned spruce. Inclosing of first quality pine clap boards laid on felt and dressed sheathing. Roofing of "Chapman" slate, laid on tarred felt and sheathing. Gutters and leaders of IX tin. Floors of narrow spruce. Plastering, three coats, hard finished. Casings and mouldings of clear pine. Doors all panelled and moulded. Sash of best make, four lights to each window, and hung to balance weights. Blinds to each window above the foundation; shutters to kitchen windows. Painting, two coats of best materials. The hard woods oiled. Plumbing; the tank (not shown) placed in the hall of the attic, just over the bath-room, is 3 by 4 by 6 feet, lined with lead; bath-tub, seat-closet, and wash-bowl in rear entry; range, boiler, sink, wash-tubs, and a force-pump in the kitchen; all connected with proper lead pipes for hot and cold

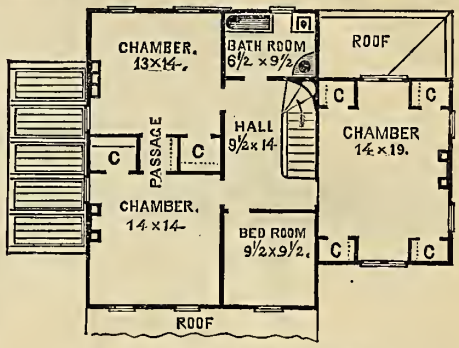


Fig. 4.—PLAN OF SECOND STORY.

water. A 4-inch soil-pipe leads from the bath-room to a 5-inch drain of vitrified tile pipe conveying all waste to a cesspool 50 feet from the house. The soil pipe is ventilated by a pipe leading from it to above the roof with a T connection at the top. The heater is inclosed with brick, and has pipes to convey warmed air to the halls and rooms of the first and second stories. Bells from the front door to the rear entry; and from the second story hall to the attic and kitchen, are put in with wires passing through tubes concealed from sight. Speaking-tubes are put in, leading from the dining-room to the kitchen. The contract requires all done in a workmanlike and substantial manner, and of materials best adapted to their several purposes.... **Cost.**—Any one at all familiar with building, will, by going over the following *items of cost*, learn the character of this house. The total of these items might easily be doubled if desirable, without changing the plans in the least, simply by increasing the expense in the details of finish. Whenever employed to prepare plans, my first inquiry is as to the amount to be appropriated for building, then to ascertain the accommodation required, the facts as to site, learn all I can of the characteristics, and tastes of the owner and his family, then prepare plans to meet the requirements, without exceeding the amount set down to be expended. *Cost* of materials and labor, viz.:

132 yards excavation, at 20c. per yard	$ 26 40
24 M. Brick (furnished and laid), at $12 per M	288 00
80 feet Blue Stone, at 15c. per foot	12 00
1,250 yards Plastering, at 25c. per yard	312 50
240 feet Cornice, at 30c. per foot	72 00
81 yards Concrete, at 30c. per yard	25 20
5,500 feet Timber, at $15 per M	82 50
200 Joist, at 15c. each	30 00
350 Wall Strips, at 11c. each	38 50
550 Flooring inside, at 18c. each	99 00
50 Flooring outside, at 25c. each	12 50
520 Sheathing, at 15c. each	78 00
500 Clap-boards, at 20c. each	100 00
Outside Cornices	45 00
27 squares Slate, at $9 per square	243 00
270 feet Gutters and Leaders, at 10c. per foot	27 00
Verandah and Porch (complete)	60 00
600 lbs. Nails, at 3c. per lb	18 00
7 Cellar Windows (complete), at $4 each	28 00
4 Kitchen Windows (complete), at $6 each	24 00
23 Plain Windows (complete), at $8 each	184 00
11 Dormer Windows (complete), at $12 each	132 00
45 Doors (complete), at 7 each	315 00

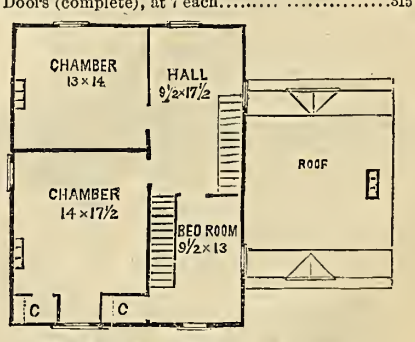


Fig. 5.—THIRD STORY, OR ATTIC.

4 Stairs (complete)	100 00
3 Mantels and 6 Shelves, $108; Plumbing, $400	508 00
Furnace, etc., $250; Conservatory, $150	400 00
Bells, Speaking Tubes, $19; Carting, $30	49 00
Painting	150 00
Carpenter's labor not included above	400 00
Incidentals	140 40
Total	$4,000 00

A Distinguished Immigrant.—Professor Baird's European Carp.

In 1876, Professor Baird, U. S. Commissioner of Fisheries, having for a long time understood the importance of acclimating the Carp in this country, engaged an eminent German fish-culturist, Dr. Rudolph Hessel, to bring over a supply of the best varieties of this favorite European food-fish. The first experiment, in May, 1876, was unsuccessful, owing to the extremely high temperature encountered on the passage, and out of 300, with which he started, only four survived. Another unsuccessful attempt was made in December of the same year, and seven more were brought from Hungary, a large number having died on the passage. In May, 1877, Dr. Hessel returned from a third trip, bringing to New York 345 young carp, 227 of which were of the varieties known as the "Leather Carp" and "Mirror Carp," and 118 of the common or "Scale Carp." The U. S. Fish Commission was not ready to receive them, and they were placed for a time in ponds prepared for their reception in Druid Hill Park, Baltimore, under the superintendence of Major T. B. Ferguson, Maryland Commissioner of Fisheries. Here they throve and increased rapidly in size, and in May, 1878, one hundred and twenty were removed to the Government Carp Ponds, built for them on the Washington Monument Reservation, in the City of Washington. These ponds, a plan of the essential portions of which is given below, are constructed after the best German models, and cover about twelve acres of land, in the vicinity of the Washington Monument.

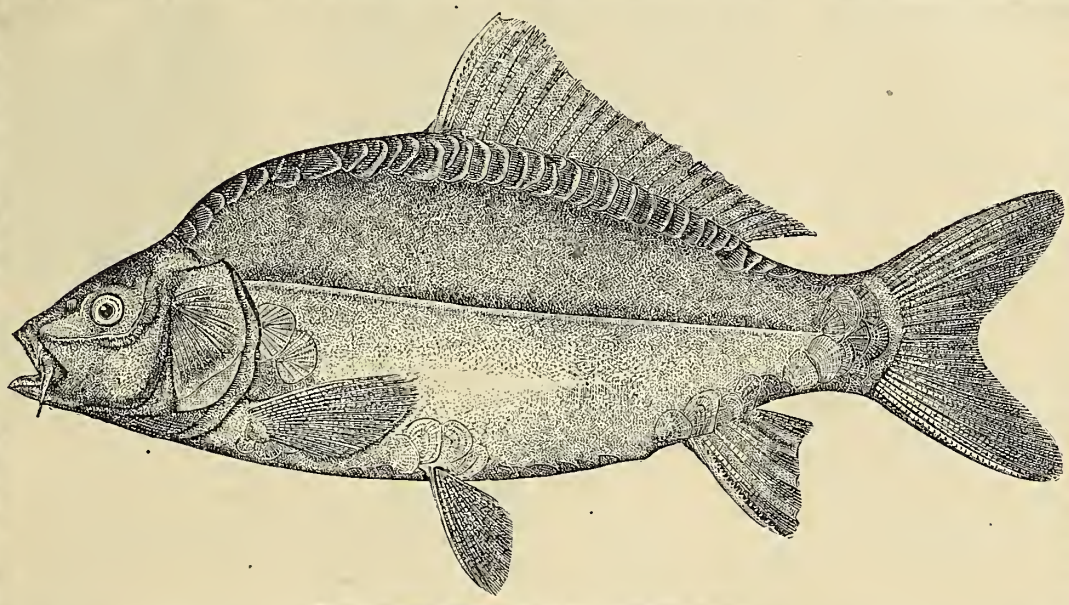


Fig. 1.—THE EUROPEAN CARP (*Ciprinus carpio.*)

The Carp have now multiplied to such an extent that it is possible to begin the work of distributing them, and, by the time this number of the *American Agriculturist* reaches its readers, Prof. Baird's messengers will have carried cans of young carp to all parts of the United States. The introduction of this new food-fish will be of great interest and importance to all inland communities, for there is no ditch, pond, or mill-dam, or any boggy, muddy spot, which can be converted into a pond, in which they will not thrive. It will be strange if, within twenty years, carp do not become as common domestic animals as ducks or pigeons. Through the courtesy of Prof. Baird we are able to present an excellent engraving of the new fish, with which, before long, many of our readers will doubtless become more directly acquainted.

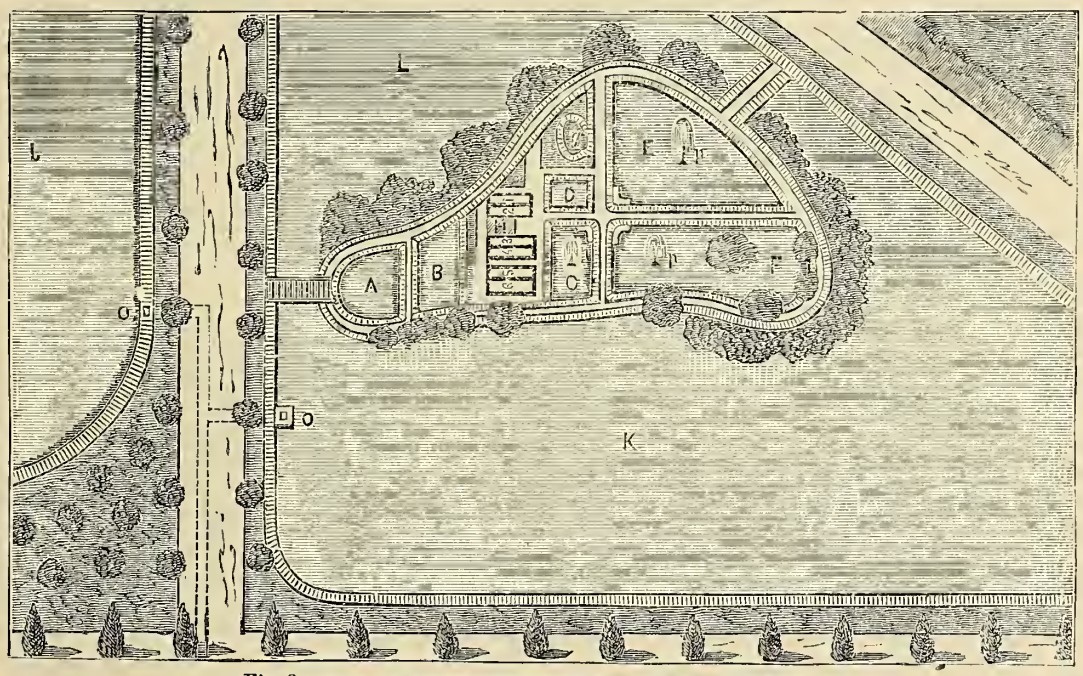


Fig. 2.—PLAN OF GOVERNMENT CARP POND, WASHINGTON, D. C.
A, B, C, D, E, and *F,* Hatching Ponds; *G,* Turtle Pond; *H,* Watch House; *J,* East Pond; *K,* North-west Pond; *L,* South-west Pond; *O, O,* Outlets; *P, P,* Fountains.

The Carp belongs to the family known to naturalists as the *Cyprinidæ,* members of which are to be found in every stream and pond in North America. Good examples of this family are the common Goldfish, and the familiar brook species known everywhere by such names as "Dace," "Chub," "Red-fin," "Fall-fish," and "Shiner." The "Buffalo-fish" of the West is also said to resemble it in many respects. The Carp, however, is the king of his tribe, and those who know, do not hesitate to say that, as a food-fish, it far excels the best of them. "In Paris, Berlin, and Hamburg," writes Dr. Hessel, "in spite of an abundant supply of different salt and fresh-water fishes, the carp is always preferred to these, and, with the exception of the trout and salmon, it frequently commands a price three times as high as that of all the rest." Artificial culture, continued through many centuries, has developed in the carp a number of varieties, as strongly marked as those of sheep, dogs, pigeons, or other domestic animals. These are divided into three groups: the "Scale Carp", which most closely resembles the original form, having scales like ordinary fishes, and has four thread-like appendages, or barbels, under the chin; the "Mirror Carp" has extraordinarily large scales, which run along the side of the body in three or four rows, the rest of the body being bare; and the "Leather" or "Naked Carp," which is almost destitute of scales, having only a few along the line of the back, and has a thick, soft skin, which is velvety to the touch. Both the latter varieties are said to be much superior to the Scale Carp, which is best known, in flavor, hardness, and adaptation to confinement. A claim has been made that carp were introduced into America, and particularly into the Hudson River, many years ago, but this is quite unsubstantiated.

The Carp has other and strong recommendations: *It is, of all fish, the most readily propagated and reared.* It has been domesticated in Europe from time immemorial, having been introduced many centuries ago from Central Asia or China, where it is native. Carp soon become tame and eat from the hands of their keeper; Dr. Hessel handles those in the Government ponds as if they were tame kittens, and says that they come to him when he whistles. Their fecundity is great. A fish weighing four or five pounds lays 400,000 to 500,000 or more eggs, and one of ten or fifteen pounds about 1,500,000. In Middle Europe they spawn from May to August, and the breeding season appears to be nearly the same in Washington: In 1879 they spawned here from June to September. The eggs are sticky, and cling to plants and twigs, hatching in from nine to eighteen days, according to temperature. The actual rate of increase is very great, owing in part to the fact that the parents do not devour their young. The 120 fish brought to Washington two years ago have increased to, at least, 20,000. *It is thus able to populate a body of water to the fullest extent,* filling up the available space with their own kind, while carnivorous species require that a large number of other fishes on which they may prey inhabit the waters with them. *Unlike the majority of American food-fishes, their diet is largely vegetable,* and they are particularly fond of watercresses and other juicy plants. They grow fat upon the *algæ,* commonly called "Frog-spittle," which covers quiet waters. They also devour worms and insect-larvæ, which they root out of the mud, and all kinds of refuse matter, such as the offal of kitchens, slaughter-houses, and breweries. By reason of these habits, *they are harmless to other fishes inhabiting the same waters.* "The food-fish indigenous to the United States," says Prof. Baird, "which has been most widely distributed in the smaller ponds and lakes, is the Large-mouthed Black-Bass. This fish is very carnivorous, preying upon almost all species in the same waters. Even the Pickerel is said to decrease rapidly when *in contact* with it. The necessity for fish-food is always a bar to a great increase of numbers among fishes, particularly in

small bodies of water." Carp, on the other hand, introduced into new waters, fills a vacancy, and not only do not decrease the number of other fishes, but by supplying them food, enable the existence of a large additional number of carnivorous fishes.

The Carp is adapted to very varied climates, and will thrive under conditions unfavorable to any equally palatable American fish. They are equally at home in lakes or streams, and in the merest puddles and ditches, and are found in the latitude of St. Petersburg as well as in Italy and Northern Africa. It is believed that they will excel all others for propagation in ponds and other sluggish waters north and south, now either barren of life or inhabited by a limited number of pickerel, cat-fishes or sun-fishes.

It is very hardy in all stages of growth.—"The Carp is able," says Dr. Hessel, "to live in water where other fishes could not possibly exist—for instance, in the pools of bog-meadows or sloughs."—Though it is not to be inferred from this that the best Carp-ponds should be thus located. In Silesia, puddles two or three feet deep, in the villages, are used for raising two-year-old Carp for stocking distant waters. From this resource a single estate realized what would amount to about $55 to the acre of pond surface. In Europe, Carp are always taken to market alive, in tanks or barrels, and, if they are not sold, returned to the water alive at the end of the day. They are said to be kept alive in cellars in the winter, wrapped in wet moss and fed upon bread soaked in milk. Dr. Hessel once kept one this way five weeks. In cold climates they protect themselves from freezing in winter by retiring in groups of 50 to 100 or more, into cavities in the muddy bottom called "kettles," where they pass the time until spring, huddled together in concentric circles, with their heads together, the posterior part of the body raised and held immovably, scarcely lifting the gills for breathing and without taking a particle of food. This abstinence and torpidity lasts in cold countries six or even seven months, and thus they can live out a very rigorous winter.

Its growth is very rapid.—Dr. Hessel says that in Central Europe its growth is entirely suspended in the winter, the increase in weight taking place from May to August, and especially in July. The rate of growth depends upon many things—the temperature of the water, the quality and quantity of food, the nature of the bottom. In rivers and lakes they attain the greatest size. The rapidity with which Professor Baird's fish have grown surpasses anything hitherto known, and indicates that the Carp is particularly well adapted to America. The normal weight to which the Carp may attain in three years in Europe is an average of three to three and three-fourths pounds; that is, a fish which has lived two summers, and is eighteen months old, will weigh from two and three-fourths to three and three-fourths pounds in the year following. Dr. Hessel states that the Washington Carp, four summers old, now weigh nine or ten pounds; those of the same age in Europe would not weigh more than four; those three summers old weigh about three and three-fourths or four pounds, while the best in Europe of the same age weigh about two pounds.

Large Farms.—Most people are attracted by the show of a great business, and the desire to extend operations is very general. But a man who can successfully manage 100 acres, may not be able to run a 500 or 1,000-acre farm, and many men who can profitably work a farm by their own labor, fail when they try to do so by hired help. To so manage a number of working men that every hour's work of each shall be made to concentrate upon one desired object, requires much ability. For want of this, many who have become "well off" on a small farm, have failed on a large one where they have had to employ help. A man may be worthily ambitious of success in business, but before he leaves a small farm, for one much larger, he should be satisfied of his ability to manage it. It is not a new thing for a man to be *land*-poor, even though the land itself is of good quality. As with extensive and overgrown nations, large farms might sometimes be of more value to all concerned if they were divided up and each part put under a partial or entirely separate management.

Among the Farmers.—No. 48.

BY ONE OF THEM.

How Butter Goes to Market.

Almost all over the country butter which is made in farmers' families in excess of their requirements, goes to the country store in exchange for sugar, tea, coffee, and spices. It is, of course, of all colors and textures and qualities, usually wrapped, or partially wrapped, in old and well-worn muslin, upon which, if "seam and gusset and band" are not apparent, the suspicion of them is. It is in lumps of ovoid form, usually weighing one to three pounds. The country store-keeper selects the best for his own immediate sales to village people; the rest is graded and packed, according to color and quality, in "Welsh tubs," or whatever other package will best suit the market. An enormous quantity of butter finds its way to market in this way, and forms the lower grades. Such butter can not be depended upon to keep, unless, indeed, the grading and repacking be done with extraordinary care; then it may prove tolerably good.

Among farmers who are really dairy folks, the butter is packed for market as soon as it is made. The expense of tubs, or pails, and firkins, (and these words are used technically with rather forced significations,) is considerable. What are known as

"Welsh Tubs"

are ash, oak, or spruce pails, without bails, but with close covers. They hold, usually, 20, 30, and 50 pounds. These are the most convenient packages for shipping to a distance, because they are not to be returned; and though they cost only about a cent a pound for the butter they contain, yet dairy folks find it cheaper to pack and ship their butter in "*return pails*" of some kind. These are of a great variety of styles and sizes. The common, and, as a rule, the best size, is the 50-pound package. It usually holds several pounds more, but not the regular 56 pounds, which is a "firkin" in Great Britain. Shipping tubs, holding just this weight, are coming into use somewhat. But the notion is growing that it is best to adhere to the decimal system, and ship abroad in tubs that will hold but 50 pounds, and in what we call *firkins*, that is, in kegs holding 100 pounds. These packages are of oak, and are very strong and neat, and are brine and butter-tight in all weathers and climates; I may add air-tight, also, for so they are, in the general acceptance of the term.

These packages are manufactured where lumber of the best sorts is accessible, and the trade requires an enormous quantity in the aggregate, especially since much lard is packed in them, or in packages closely resembling those used for butter.

"Fancy Butter" Packages

are, of course, of many forms, as each maker wishes his butter to be both attractive and unique. All "print-butter," or butter in small packages marked with the name of the maker, is properly regarded as "fancy," whether it bring a higher price than other good butter or not. Still, it ought to be good enough to sell higher than good tub or firkin butter.

Philadelphia has long been famous for its excellent print-butter. This is generally put up upon the common hand stamps (fig. 1) in pound "pats," which may have either of the two forms represented by the dotted lines. Simple devices, such as a sheaf of wheat, roses, pineapples, acorns, and oak leaves and nondescript leaves are common. Monograms or single letters are not rare, with occasionally a more elaborate device. These "pats," for they are patted into form upon the stamps, are marketed in what are known as Philadelphia tubs, which are oval tubs of cedar, lined with tin, and having ice chambers in each end, having a nearly rectangular space in the center, in which the butter is packed upon shelves 2½ to 3 inches apart. Butter packed over night, the ice chambers being filled with a freezing mixture, and refilled in the morning with simple ice, will go 48 hours in ordinary summer weather without softening. The covers lock down, and the tubs are often cased in quilted or felt jackets.

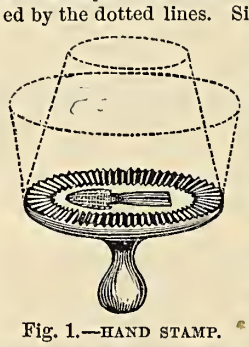


Fig. 1.—HAND STAMP.

A good deal of butter is now made in rectangular (square or brick-shaped) prints, and shipped in

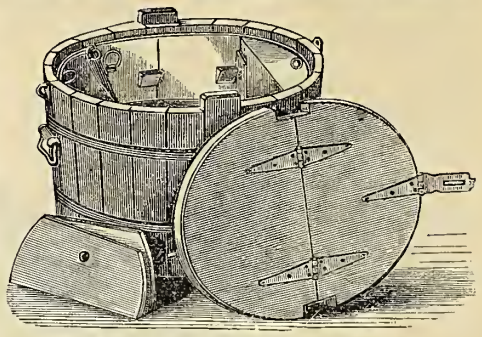


Fig. 2.—THE PHILADELPHIA BUTTER TUB.

these Philadelphia cedar tubs (fig. 2), or in square packages, with provision for ice in hot weather. One of the neatest of these is known as the Lancaster package. Its peculiarity is that tin cups, or boxes of tin, are provided for each print of butter, the prints being wrapped in pieces of muslin. The advantage offered by this package is, that the prints do not become marred in the hands of careless shippers and carriers, as is frequently the case.

One of the most ingenious applications of the new kind of veneering, cut in a continuous ribbon round and round the log, is the making of butter packages by the Bradley process. This is protected by several patents, and consists in *sewing* the bands of wood together, so as to make the sides of round (cylindrical) boxes or flaring pails, adapted to hold butter and similar articles, by having bottoms and covers attached by means of tin bands. Figure 3 shows a stack of these boxes, holding from ½ lb. to 10 lbs. They are made of spruce or of oak, and bear scalding in whey, and in brine, if desired, although these woods are so nearly tasteless that anything more than simple scalding seems unnecessary. These boxes are very strong, and inclose the butter nearly air-tight. They are made to be packed full of butter, a disc of wax paper or piece of muslin being laid over the butter. When the butter is to be used, the cover is removed, and the seam is ripped with a penknife, when the package may be opened and taken off from the butter, which is left in a solid cake. Figure 4 shows the crate in which these packages are packed, the whole being furnished at the low cost to the

Fig. 3.—BRADLEY'S BUTTER BOXES.

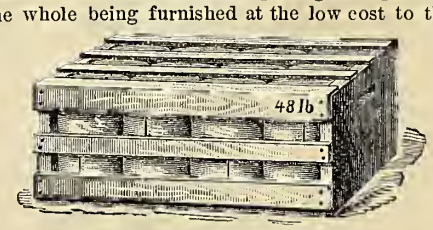


Fig. 4.—CRATE FOR SHIPPING.

consumer of one cent per pound for the butter which the crate will hold. The pails (fig. 5) may be used for butter also, but are also well adapted for lard, oysters, sausage meat, etc., and both the pails and boxes are furnished, when so ordered, both water and grease tight by being dipped in hot paraffine, which is absolutely colorless, odorless, and tasteless, and insoluble in water or cold fats, and penetrates both the wood and the seams and joints.

The Burchard "Knock-down" Package.

This is also a new package, and it seems so well

adapted to its uses that it is sure to become popular. The term "knock-down" does not signify that this is a perfect *stunner*, hut that it comes to pieces in such a way as to be packed in a small compass, and be readily reconstructed. It is intended solely for pound and half-pound rectangular prints, and as the hutter in the case occupies but little more space than without, it admits of very close packing. Easy inspection, convenient delivery to customers, and perfect protection from the dangers of careless handling, are the objects supposed to be accomplished. Figure 6 represents a box holding one pound, with a paper gummed label about it, stating the name and address of the maker of the butter, and the dates at which it was made and shipped. The lahel being cut, the lid lifts off, and the box opens at any angle, as shown in figure 7, leaving the butter hy itself in its wrapping of muslin or

Fig.5. BUTTER PAILS.

Wax Tissue.

This article, hy the way, is a very neat and heautiful thing for many purposes. It is simply fine tissue paper, saturated with paraffine, thereby rendered water and grease-proof, as well as air-tight. If the hutter wrapped in it be kept cold and be dry when wrapped, the paper is easily removed, hut if warm or wet when wrapped, then the paper sticks to the butter of course —for the nature of the butter is not changed, and being long in contact with moisture softens the paper. When used with discretion, it is far preferable to muslin for wrapping print-hutter, and much cheaper, and may he left in contact with the same indefinitely without harm to it.

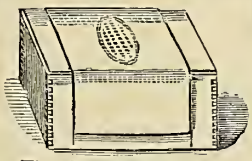


Fig. 6.—THE PACKAGE.

The Dollar a Pound Butter,

much of it comes to market in paper, that is, pasteboard, boxes, without covers, and wrapped in muslin. This is the plan followed at Echo Farm, and Mr. Starr's imitators. These hoxes have the following, or an equivalent, printed upon them; "This butter must not be left in this hox or nap-

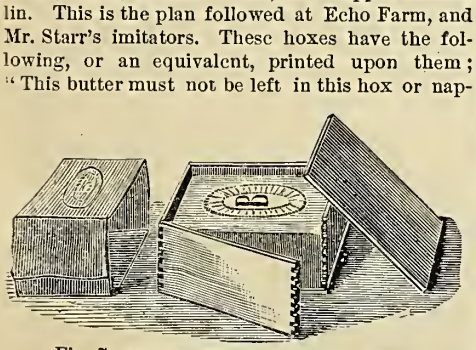


Fig. 7.—THE PACKAGE KNOCKED DOWN.

kin, but put in a cold place, but not in contact with ice, nor near any meat or vegetahles." Long contact with the wet "napkin" is supposed to hurt the color of the butter, and to impair its flavor also. Close wrapping in the Wax Tissue has no such influence, hut preserves the hutter practically air-tight, and even though placed in the family "food safe," or ice-box, the flavor is not affected. The butter in these paper-boxes is placed in cases upon shelves, or in layers, separated by thin boards; in hot weather, space being left for a can of ice, and so shipped under lock and key.

Tin Shipping Cases.

I have two other butter packages to describe at present. One of these is quite new—a stout hand-pail, holding perhaps 14 quarts, but adapted to the size of the round prints which it is to carry, is provided with large muffin rings, which will just take in a "pat" of butter, and are high enough to protect the device upon the print. Three or four of these are placed in a layer, and one layer is placed upon another, separated by a disc of tin, while the bottom layer rests upon a stout disc, strengthened by a ring, and having a stout wire coming up from it as high as the edge of the pail, where it is turned into a ring to lift out the whole contents at once. The top layer is covered hy a disc of tin, which is held in place by the rim of the cover. Figure 8 shows this pail, which is well adapted to sending small quantities of butter short distances in summer, or any distance in cold weather. A heavy iron ring protects the hottom, and a lock aud chain, such as are used upon milk cans, makes all secure. In warm weather it would be well to jacket the case, when the hutter, if started cold, would not soften for nearly 12 hours. The

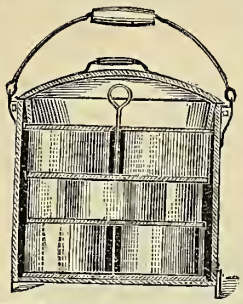


Fig.8.—TIN SHIPPING CASE.

"Norton Butter Shipping Case."

Circumstances lately recalled to my mind a shiping case for butter, which I saw in use many years ago, hy the late Mr. John T. Norton, of Farmington, Conn., and which I learn is still used by the Farmington Creamery Co., under Mr. Edward Norton's management, and more or less hy other parties. I give you a sketch from recollection (fig. 9). The case holds 50 lhs. in summer, and 60 lhs. in winter, but might be made smaller. The hutter is held in pans, with perpendicular sides, having a narrow rim, turned in at the upper edge. Each pan holds ten pounds, in balls or prints, and one pan rests upon another. They are placed in a heavy tin cylinder, like the body of a rail-road milk can. At the top a pan for holding ice is placed, with its rim resting on the rim of the outer case, and this is covered by a double pail cover, with a handle, through which the chain is passed, by which the cover is locked down. The case has handles like a milk can, a heavy iron hoop at the bottom, and at the top, and is shipped jacketed in felt, covered with stout, colored muslin. The handles come through the jacket. The effect of the ice is distinctly perceived in the lowest pan, and the case is a very strong one, and not liable to damage, as handled by the "gentle" express and railroad hands.

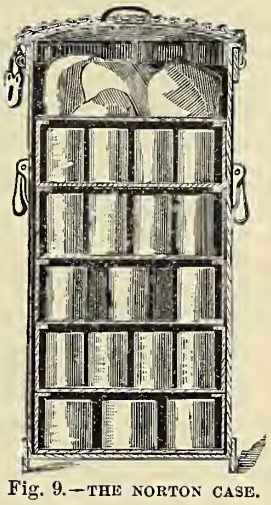
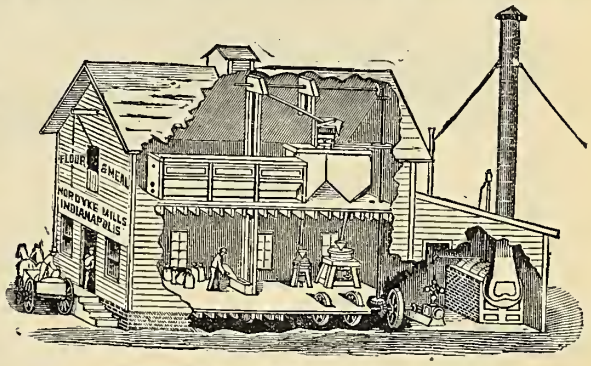


Fig. 9.—THE NORTON CASE.

Railroads vs. Farm Stock.—The thousands of miles of railroads now in operation in the United States, and the many more to be built, makes the subject of the killing of farm stock, hy passing trains, a practical and important one. Under the existing laws, railroad companies are required to either fence hoth sides of their roads, or to provide an equivalent barrier, and to maintain cattle-guards at all crossings; the corporations are only released from damages done to stock when all such fences and necessary measures are taken to keep stock from their tracks. If the track is thrown open at any point, not from public necessity, the company is liable for damages. The fact that the owner of the stock has not taken any pains to keep his cattle out of danger, does not relieve the railroad corporation of its obligations to provide barriers.

Grain Mills to Order.

One need not be very old to be able to remember when the erection of a mill, even the simplest, for merely grinding corn, was an important event. There was much calculation heforehand, as the work of many different persons was required, a great number of parts was to he provided from various sources, and all, finally, with much trouble, brought together, and adapted to one another. After much disappointment and many delays, the mill was started; yet the mill was worth all the trouble it cost. From the moment it was completed, the locality rose in importance, and hecame a center to the neighborhood for many miles around. It made every farm within a wide circle more valuahle, for



NORDYKE & MARMON GRINDING MILL.

however successful the farmer in raising good crops of Indian corn and wheat, they must first go to the mill hefore they could be utilized. At first we had wind-mills and water-mills, and then mills independent of either wind or water, being worked by steam, but whatever the motive power, the making and bringing together of all the varied parts of the mill itself and its accessories remained a work requiring hoth forethought and time. It is not surprising in the general improvement in all agricultural machines that the mill, that most important accessory to the farm, should have kept pace. It used to be said, when parts of Maine were noted for their activity in ship-building, that ships were built by the mile, and cut off in lengths to suit purchasers. In a similar manner, one can now order a mill of a given capacity, and receive it, motive power, mill, and all complete, to the last nut and the wrench to turn it with, in a very short time. Rarely have we examined a catalogue with so much interest as we did that of the Nordyke & Marmon Co., of Indianapolis, Ind.; it is, in fact, a treatise rather than a catalogue, having 175 large pages, and so full of illustrations that a friend with strong mechanical tastes much desired to possess it for the heauty and variety of its engravings of machinery and parts of machines. As motive powers, various steam engines are described and figured, and the manner of utilizing water power, with directions for estimating the power of a stream, are given. Mills, from the largest to the smallest, are illustrated in full, with every accessory to their proper workings, including machines for cleaning the grain before griuding, to those for packing the finished flour, and in the minutest detail, showing every part, wheel, nut, screw, etc. But we can not enumerate the contents of this interesting work, suffice it to say that it shows every step, after the wheat leaves the threshing machine, and after the corn comes from the hands of the husker, needed to convert the one into flour and the other into meal. We were pleased to note that, while large establishments are provided for, the needs of small mills are not overlooked. One can procure a complete mill, with two run of stones, one for wheat and the other for corn, with every accessory, including motive power, ready to be set up in any one or two story huilding, as seen in the engraving, at a very moderate outlay. In

those wheat-growing localities, where the grain has to be sent a long distance to a mill, and the flour, for use, returned an equally long distance, a farmer, or several associated farmers, may easily establish such a mill, and it would no doubt be a profitable investment, and at the same time a convenience as well as a blessing to the neighborhood.

Ventilating Stables.

In the construction of stables there should always be a provision for proper ventilation, and at the same time for preventing any draught from falling directly upon the animals. While there is a wind, ventilation is easy to secure, but when the air is still, it is different, and the air of the stable too often becomes foul. The valvular window is generally preferred to all others for the introduction of air, and a plain ventilating shaft for carrying away the bad air. This ventilator, seen closed in figure 1, is a combination window and ventilator, the movable part being a sash of glass guarded by bars of iron. It is shown open in figure 2, the sash being against the outstanding frame. The distance to which the sash is opened is regulated by a ratcheted rod, fig. 3, fixed near the upper end of the ventilator. The air, as it enters the stable, must rise and pass in the direction of the arrows. The size of the ventilator should be about two feet square, and situated above the heads of the horses.

The foul air is best carried off by a small wooden shaft; passing from the top of the ceiling of the stable, to the roof, where it is protected by down-draught guards; one foot square is large enough for a stable of six horses. A section of a stable, with the shaft *a*, and ventilator window, *b*, shown in position, is given in fig. 4. It will be observed that the fresh air enters above the horses, and the foul vapors pass away above also, thus preventing any

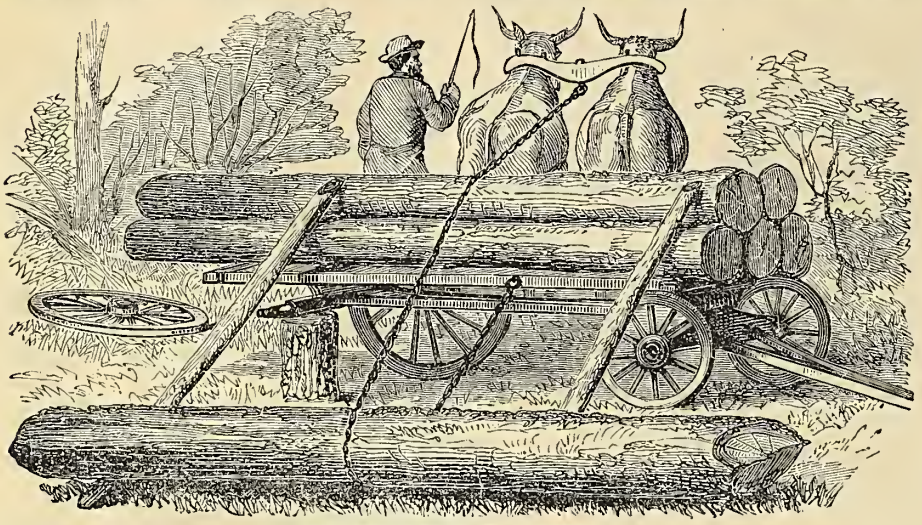
Fig. 1.

Fig. 2.

chilling draughts that will surely come by having the air enter the bottom of the stable. There is a constant interchange of the upper and lower air.

Loading Logs.

A log is a heavy and difficult thing for one person to handle, unless he takes advantage of it. By *advantage* we mean, availing ourselves of any contrivance or mechanical power which enables us to avoid lifting it directly up by main force. In loading logs, the work may be greatly facilitated by using the inclined plane. In many places there is not sufficient snow for logging with sleds, and the wagon must be used. The engraving shows the method of loading logs upon a wagon by ox-power. Two strong skids, ten feet or so in length, are provided, one to be placed near each end of the wagon, as shown in the engraving. One hind wheel is then removed, the axle being blocked up; a chain is



LOADING LOGS ON TO A WAGON.

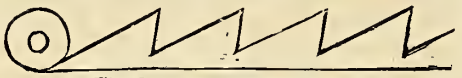


Fig. 3.—THE RATCHET ROD.

fastened to the body of the wagon near the middle, and passing under the log midway from its ends, is brought back over the wagon to the oxen or horses upon the opposite side. With this arrangement the log is brought upon the wagon with very little effort. The team must be steady—and for this work oxen are to be preferred to horses—else the log may be carried too far, and all the work be lost. It is usually best to drag the logs into heaps, and, if possible, where the wagon may be on lower ground than the logs to be loaded. In snow, the same method may be used with a sled, with even greater ease than with the wagon, as it is lower.

Tim Bunker on Town Bounties.

When I saw Seth Twiggs coming down Hookertown street with an uncommon cloud of smoke about his old beaver, I knew there was something in the wind. He hauled up at my wood pile, took a seat on a log, and said he:

"Did you ever see folks act so like a pack of fools as they did at town-meeting. Jest as we've got the foxes under a little, and pretty much scared 'em out of town, they must go and repeal the bounty. Why, I can remember arter the bounty was raised that we used to pay $500 in town bounties on foxes, showing that we killed at least a hundred foxes every season. It wan't of much use to try to raise poultry, especially near any piece of woodland, for the foxes in spring would come right up to the barn and snap up geese, turkeys, and hens, even in the day time. Deacon Smith, I know, lost twenty dollars' worth of turkeys in one night, and I 'spose two thousand dollars would not pay for the poultry killed and carried off by the foxes. With hunting with hounds in the winter, and digging out the young ones in their holes in the spring, they had become mighty skase and poultry stood a good chance."

"I can tell jest what was at the bottom of the repeal," said Jake Frink. "Ye see, George Washington Tucker and myself took a scoot up thro' the White Oaks last spring and holed an old she-fox and arter digging the better part of a day, we took her out and six of her young ones, and got thirty-five dollars at the town treasury, bounty money, a pretty good day's work. Ye see this riled Uncle Jotham Sparrowgrass, Benjamin Franklin Jones, and a few more of their set, who had opposed raising of the bounty from two to five dollars. They said it was making money too fast and robbing the treasury. So they kept Hookertown street in an uproar all summer and talked agin bounties, until they made most folks thing it was the unpardonable sin. So you see when town-meeting was warned, it was put in to repeal the bounty on foxes. There was a general turn out at the meeting, especially of people who never owned a turkey or chicken, and the bounty was taken off. I guess they'll get their pay 'fore long in the price of chickens and turkeys."

This talk occurred three years ago last spring, and Jake's prophecy has come true. The repeal of the bounty has led to the multiplication of foxes beyond measure, and hardly a farmer in town has escaped visitation this summer. Poultry yards have been decimated, and in a few cases cleaned out, so that no Thanksgiving turkey is left for the spit. It has borne much harder upon the farmers back near the woodlands than upon people living on the street. The fox is a crafty creature, and loves his own safety, a little better than fresh turkey and goose. A farm-house near a bit of woodland is his special delight. He can steal a young turkey at any time and be out of sight before his theft is known. In the absence of bounties, there has been no special inducement to hunt foxes, cur dogs have taken the place of hounds, and it is only as hunters have come in from the city that a fox has been killed. They have grown so bold that it is common to see them in the morning prowling around our barns. It is somewhat difficult to estimate the damage done by them, for they begin their depredations in the spring, killing geese and turkeys upon the nest, while sitting, or while yet with their broods, before the young ones are capable of taking care of themselves. Some farmers, who have sold three hundred dollars' worth of turkeys in a year, will not have half that amount this year. The tax upon the poultry yards is many times heavier than the bounty money would have been, and it is much more unevenly distributed. It is a mistaken policy to repeal the bounty upon foxes at any time. If it is kept on persistently, they will be hunted until they are driven from the borders of the town, and the bounty will be reduced to the minimum. Foxes are like weeds. None should be left to go to seed. They have fulfilled their mission, and no place should be left for them in a civilized State. They are unmitigated pests and too expensive to be tolerated. The policy of repealing bounties is penny-wise and found foolish. If we try to save the bounties, the foxes will quadruple the amount by laying our poultry yards under toll. They will make poultry yards insecure and unprofitable. The true policy would be to have the bounties offered by the State instead of the towns. Then the ex-

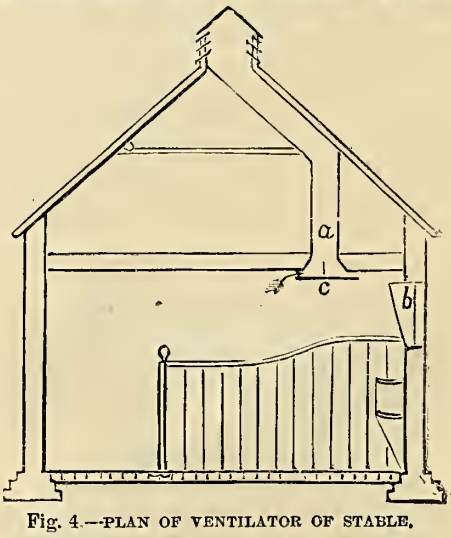


Fig. 4.—PLAN OF VENTILATOR OF STABLE.

termination would go on over a large territory at once, and if the policy were continuous, foxes would become as scarce as bears and wolves. There would be no unfairness in this mode of taxing, for the cities indirectly would be as much benefitted as the agricultural towns. Make poultry raising secure and its price is cheapened in all our cities.

Hookertown, Ct., Nov. 5, 1879. Yours to command, TIMOTHY BUNKER, Esq.

Mines and Mining Terms.

The United States has the richest mineral deposits of any country in the world. The gold and

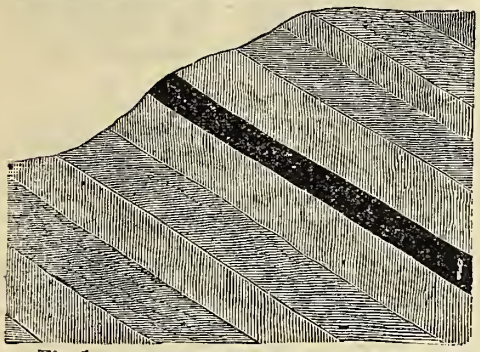


Fig. 1.—A BED BETWEEN STRATA OF ROCK.

silver mines are now yielding nearly 80 million dollars yearly, and the enormous deposits of silver ore and gold-bearing rocks discovered within the past two years, promise to double this yield whenever the new mines shall be opened and made productive. There were coined in the year ending June, 1879, over 65 million dollars of gold and silver, and these metals to the value of 12 millions were used in manufactures. The coal deposits are larger than those of any other country, each of several of the States having a larger area of coal than the whole of Europe, while the beds of the purest iron ore, and the veins of copper and copper ore, are equally superior in extent and value to any others in existence. The future development of our mining promises to surpass any thing previously known in the world. The recent wonderful discoveries of silver, and the rapid extension of mining, have created a general interest in mining, and the terms used by miners have passed into the periodical literature of the day. As every intelligent person, when reading of "levels," "slopes," "winzes," "bonanzas," and the like technical terms used in mining, wishes to know their meaning, we propose to give such a sketch of the general operation of a mine as will explain and illustrate them. Mineral deposits are found in the shape of beds or veins. A *bed* is a deposit lying conformable to and between the strata of rock in which it is found, as seen at figure 1, in which the dark, shaded part represents a bed. The immense deposits of silver bearing

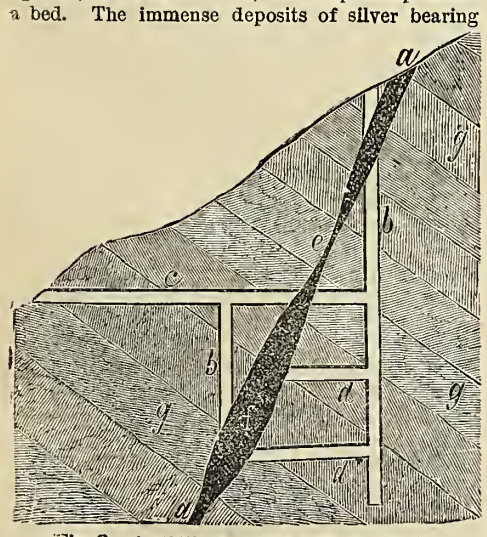


Fig. 2.—A VEIN THROUGH BEDS OF ROCK.

lead ore recently discovered in the neighborhood of Leadville, Colorado, are in beds, and such beds are not of the regular or permanent character of what are known as true fissure veins. Veins differ from beds in penetrating the rock across the strata, as seen at figure 2, in which the lines from *a* to *a* represent a *vein* cutting through the beds of rock, *g*, *g*, *g*. The point where the vein protrudes at the surface of the ground, is called the "out crop," and veins are most frequently discovered by finding its fragments, which are called "float," upon the sides of the mountain below the vein, or at the bottom. When these pieces of "float" are observed, the "prospector" searches above until he finds the vein from which they came. If the vein is a promising one, and is found to contain valuable mineral, a shaft is sunk to "prove" it. A "discovery shaft" is one sunk on the vein and following its direction for the purpose of proving its value. When this is found to be satisfactory, a working shaft is sunk perpendicularly through the rock in such a manner as to give the greatest facility in working the vein and raising the mineral to the surface. The shaft is shown at *b*, figure 2, and cuts the vein at some distance below the surface. A tunnel or "adit level," *c*, is driven horizontally through the rock to cut the vein as low down the mountain as possible, and through the vein to the main shaft to carry off water and ventilate it. From the adit level it is usual to sink other shafts, *b*, to reach the vein at a still lower level, and other "levels" are driven from the main shaft, as shown at *d*, *d*, to cut the vein in as many places as possible to make the working more effective and profitable. Veins are not regular in width or their direction; they "pinch" in places as at *e*, sometimes so closely that the "walls" are separated only by a mere thread of vein rock, while at other places the

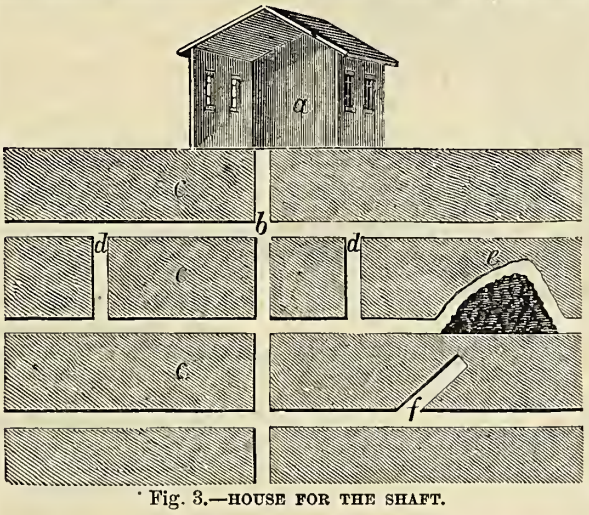


Fig. 3.—HOUSE FOR THE SHAFT.

walls separate widely, enclosing enormous masses of mineral. When the ore found in such a wide space is rich, it is known as a "bonanza," and many millions of dollars of gold and silver have been taken from single mines in such places. The lower wall of a vein is called the "foot wall," and the upper one the "hanging wall." The wall is the surface of rock which is in contact with the vein, and is often smoothed and polished by the movement of the vein matter upon it pressing with enormous force. The rock outside of the vein is called the "country rock," and that in the vein, and with which the mineral is mingled, is called the "vein matter" or "gangue." This is usually quartz in fissure veins. When the shafts have been sunk and levels driven, the vein is said to be "opened on," and the work so far is known as exploring. The vein is then worked for profit. A house is built over the shaft for protection (*a*, fig. 3), and is called the shaft-house. Hoisting machinery is set up, and pumps are put down the shaft to free it from water. The work on the vein differs from that on the shafts. Figure 3 is supposed to represent the workings on a vein as would be seen if one side was exposed to view; the shaft is seen at *b*, the lines, *c*, are levels or "drifts," and the opening of these on the vein is called "drifting"; levels are usually driven at each 100 feet down the shaft after "pay-rock" is struck. At *d* is a "winze," which is an opening made perpendicularly from one level to another. At *e* the process of "stoping" is shown; this consists in taking down the vein matter from overhead, the rich mineral being taken out and the waste being thrown down and left to fill up the level. At *f* is an "upraise," which is the reverse of a "winze," and is used to follow up

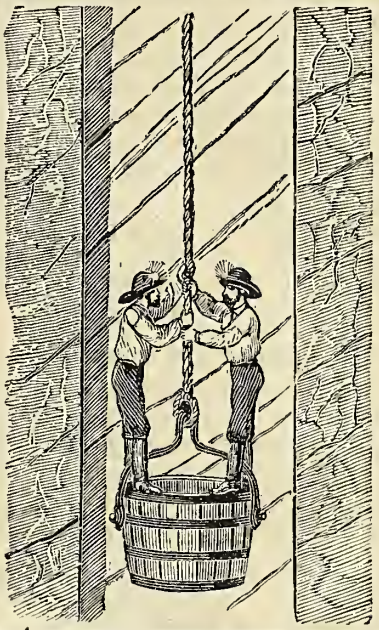


Fig. 4.—MINERS PASSING THOUGH THE SHAFT.

a deposit of ore richer than usual, and which, when it runs up into the vein, is called a "chimney." Such a deposit recently found in a California mine carried the market value of the stock from $6 up to $90 per share. The stoping on the vein goes on until all the valuable mineral is taken out, when the levels, as they are worked out, are abandoned. When the rock passed through, in a level, is loose and liable to fall, the level is timbered, as shown at figure 5. Very strong timbers are put together, as there shown, a few feet apart, and others are laid from one of these to the other when required to support the roof. An enormous quantity of timber is used in a large mine, and in some cases the timbering has taken fire from the lanterns or from blasts, and has burned out, doing much damage. It is in this way that mines take fire; and coal mines are sometimes thus fired, and the coal itself burns for months or years. At figure 4 are shown two miners descending a shaft on a tub, which is used to raise the rock and ore to the surface

The Useful and Beautiful in Poultry.—If we are to accept the statement of Darwin—and no one is more careful and reserved in his expressions than he—no domesticated animal admits of so much variation, beauty of shape, and richness in coloring, as poultry. But we are not called upon to accept this solely from the multitude of facts presented by this great naturalist in his work, "*Variation in Animals and Plants, Under Domestication.*"

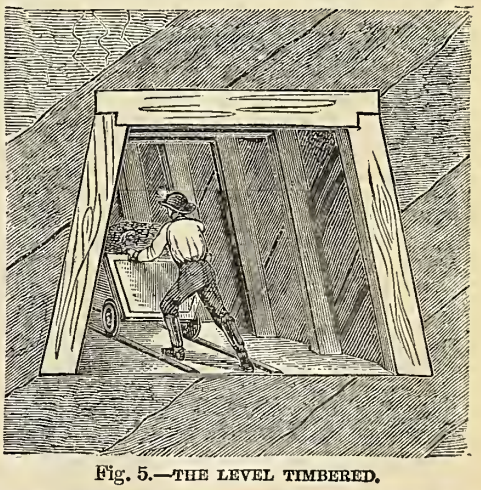
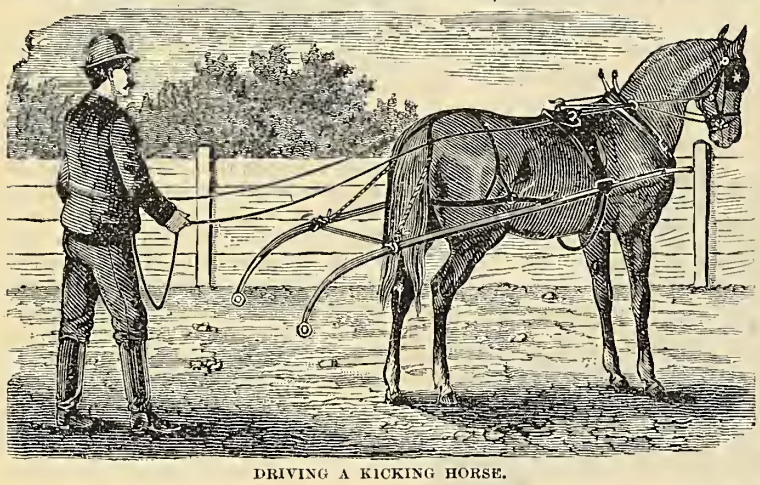


Fig. 5.—THE LEVEL TIMBERED.

If one visits one or more of the many Poultry Exhibitions, now being held in widely separated parts of the Union, he will be convinced of its truth. There are breeds upon breeds, and varieties almost without number, some of them being quite new to the trade. To the making of new varieties of poultry, there seems to be no end; but with it all, the stock, as a whole, is getting better. Division of labor has come in, and some breeds are noted for their sitting powers, while others, so to speak, furnish the eggs, while others still, furnish the best flesh. It is pleasant to think that outward beauty, and inward usefulness, can be thoroughly combined in these birds; to know that in some cases, "fine feathers," *do* make "fine birds," and that a graceful form, and proud bearing, does not of necessity exclude solid and useful qualities.

Training of a Kicking Horse.

A method of curing a kicking horse, or of training a colt to withstand any unusual pressure or contact of the harness behind, is described as follows: The animal is harnessed, as usual, to the shafts of a buggy or wagon; the shafts are then separated from the vehicle, being kept from trailing on the ground by straps or cords from the crupper,



DRIVING A KICKING HORSE.

as shown in the engraving. The horse or colt is then driven in the usual manner, the driver walking behind, and occasionally pushing the shafts to cause the breeching to press on the hind-quarters, or pulling them sidewise to interfere with the crupper, or in any way that may be possible, endeavoring to disturb the animal and train him to remain quiet under the disturbance. The horse may kick as he pleases, the shafts can not be hurt, as they are raised at every attempt. In time the horse will understand the matter, and refrain from kicking.

The Sheep's Foot—Care and Neglect of It.

Foot-rot is a most destructive disease of the sheep. There is an incipient, and easily preventible, and curable form of this disease, and there is a malignant and contagious Foot-rot, which infects and poisons the soil, and spreads sometimes with most frightful effect, among large flocks, destroying the sheep by hundreds and thousands. The malignant form grows out of the other, and it is questionable if it could not be prevented from spreading among the sheep, even from infected ground, if their feet were only in good condition. But the sheep's foot is seldom in good condition naturally, because the

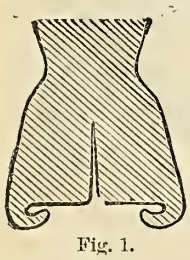


Fig. 1.

Fig. 2.

shepherd rarely thinks it necessary to examine it, until something wrong is evident, from the lameness caused by it. Then precaution comes too late. The manner of growth of the sheep's foot is peculiar, and upon this depends its proclivity to damage and disease. The walls of the hoof grow from above downwards, meeting the growth of the sole at the junction; the outer layers of the former being produced indefinitely, and if not worn away by contact with the ground, pass the sole and spread beyond it, turning under, and forming a loose covering, beneath which, moisture, filth, sand, stones, and other foreign matter find a lodgement. These foreign matters soften the horn of the sole, or otherwise injure it, so that disorganization, or distruction occurs, and carries the injury into the interior of the foot. Stones or gravel that may be enclosed under the excess of horn, press upon the softened sole and irritate the sensitive tissues under it, and although as yet, no actual damage may have occurred, yet the sheep is unable to walk upon its feet, and moves about on its knees. When this is seen, no time should be lost in examining the flock, and remedying the mischief, while this can yet be easily done. The feet will probably appear as shown at figure 2, the walls of the foot having out-grown the sole, and not only turning under at the sides, but turning up at the toes (figs. 2 and 3), thus preventing the natural use of the feet. This is to be remedied by the use of a pair of toe nippers, made expressly for trimming the feet, and also by the use of the knife. The walls of the feet are trimmed at the sides with a knife, and all superfluous horn is removed. The toes are clipped with the nippers, figure 4; a pair of common pincers may be used, if the edges of the claws are filed and ground sharp. The hoofs then appear as at figure 5; the toes being clipped, to reduce the sole from the distorted form, to the rounded form, as shown at figure 3. Neglect of these precautions, has ruined many flocks, while the pastures have become so poisoned with the diseased and infectious matter, that no healthy sheep could be kept upon them, until after an interval sufficient to rid them of the contagion. The result of neglect may be described as follows: The horn of the sole being softened and decomposed, as previously mentioned, and the sensitive inner portions of the foot being injured, inflammatory and suppurative action is caused within the foot;

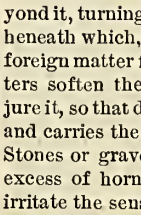


Fig. 3.

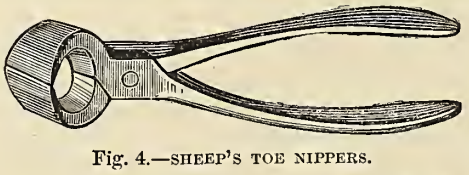


Fig. 4.—SHEEP'S TOE NIPPERS.

escape of the products of inflammation being impossible through the sole at first; intense suffering results, and a generally disturbed condition of the animal ensues. This is the first stage of malignant foot-rot. In course of time the sole is decomposed, and fetid pus escapes, by which the herbage and soil are infected. The disease spreads through the whole foot, and appears at the coronet. Fungoid, or mushroom-like excrescences appear on the sole, and at the coronet, and if neglected at this stage, the whole foot may be lost and the sheep ruined. In this condition, radical treatment is needed. The sound animals should be removed at once to new and clean pastures, or into a clean yard. The diseased sheep are to be treated, by means of caustic dressings of the feet; Hydrochloric (Muriatic) Acid, diluted with three times its bulk of water; a solution of one dram of Chloride of Zinc, in a pint of water, or Carbolic Acid should be used to destroy the diseased growths, and persevered in, until sound parts are reached, when the usual stimulant dressings may be substituted. The sheep

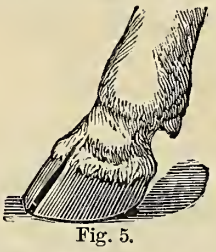


Fig. 5.

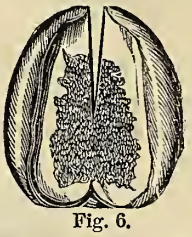


Fig. 6.

should be kept on a clean floor, covered, or well dusted with fine air-slacked lime, or in a dry, clean, soft pasture, which should be plowed, so soon as its use by the sheep is no longer necessary.

The Boys at Work.

Interesting Experiments in Corn Raising by 138 Maine Boys.—An Example Worthy of Wide Imitation.

Stillman B. Allen, Esq., for many years past in successful business in Boston, retains a lively interest in the place where he spent his boyhood, a quarter of a century or more ago—York County, Me. One of the ways of manifesting this interest is in stimulating the boys of the present day to observation, thought, and experiment. Last spring he offered $200 in seven prizes—one of $100, one of $50, and five of $10 each—to the boys in the County under 17 years of age, who should produce the most Indian corn upon one-eighth of an acre. Each boy intending to compete was to send his name before May 1st, to the President of the County Agricultural Society, who had charge of awarding the prizes. About 200 boys reported. A committee of one or more men was appointed in each town to measure every parcel of ground, and to be present at the harvesting, husking, and weighing of the crop, and report at the Town House in Alfred on Oct. 25. Each boy was required to fill out the blanks furnished, giving a full account of the time of plowing, planting, kind of seed corn, and full particulars as to manure, cultivation, etc, (These blanks will be bound in book form by Mr. Allen, and kept in the archives of the County Agricultural Society for reference and use.) We have before us the report of Mr. John Hall, President of the Society, giving a full account of the results obtained by 138 of the boys, some 75 of whom were present with their parents and many others, at the time of making the reports. We regret not to have been among the number to have seen the displays of the specimens of corn, and especially to have seen the bright-eyed, enterprising boys. We have space for but an epitome of some of the results. The ears were reckoned at 70 lbs. for a shelled bushel of 56 lbs.

The average yield of the whole 138 trials was just about 100 bushels of shelled corn per acre. The first prize was awarded to Moses Milliken, of Biddeford, for 160 bushels per acre. 2d to David J. Morrell, of Cornish, 153 bushels. The next five prizes went to A. O. Bennett, of Waterboro, 145 bushels; Cyrus H. Smith, of Dayton, 144 bushels; Willie B. Moore, of Limerick, 142 bushels; Charlie G. Austin, of Lebanon, 141 bushels; and Arthur M. Deering, of Waterboro, 140 bushels. Six boys raised 131 to 137 bushels per acre; 12 raised 120 to 127 bushels; 23 produced 110 to 119 bushels; 24 produced 100 to 109 bushels—making 72 boys who grew 100 bushels and upward. 22 others produced from 90 to 99 bushels per acre. 29 obtained 75 to 89 bushels, and only 15 fell below 75 bushels of shelled corn per acre. Doubtless, owing to poor soil, lack of fertilizers, etc, many of the boys getting the lesser crops were entitled to high praise for their efforts. Indeed *we* commend every boy who had the intelligence and spirit to enter the contest.

This shows what can be done in producing corn in a county in Maine, lying between 43° and 44° of

north latitude. Not having the reports before us, we can not judge as to the profit of such crops, the cost of manure, cultivation, etc., nor are we concerned as to this in the present case. The important result is the effect upon the boys themselves, and upon many other boys in the county and elsewhere. These boys were led to *think, reason, observe*. They will each examine into how and why this and that one succeeded better or poorer than themselves. They will be better thinkers and workers hereafter. Mr. Allen's thoughtful offer will be worth to his native county, in the far reaching future results, more than tens of thousands of dollars expended in some ways that might have been selected. We heartily wish there might he a Stillman Allen for every county in the whole country; and where there is not, we suggest that a

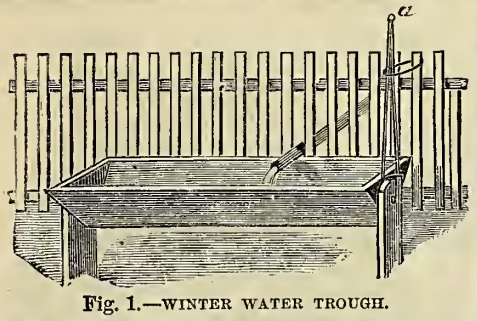


Fig. 1.—WINTER WATER TROUGH.

like sum—if necessary one of the $200 prizes often given to some fast "nag"—he appropriated hy the Society to the henefit of some hundreds of youth. The hoys of "17 and under" of to-day, are to be the actors upon the stage a very few years hence.

P.S.—Mr. Allen is so pleased with the result in York County that he now offers prizes of $200, $50, and five prizes of $10 to the hoys of the entire State, who shall produce the most corn from one-eighth acre during 1880. Those not over 18 years, who desire to compete, will send their name and address to Hon. B. F. Hamilton, President Maine State Agricultural Society, at Biddeford, Me.

Hints and Helps For Farmers.

A WATER TROUGH FOR WINTER.—An ice-clad water trough for cows to drink from is neither pleasant to them nor profitable for their owner. To raise 20 or 30 quarts of water from freezing point to nearly 100 degrees, will use up the effect of a large quantity of food, which should be made to do more useful work. In such cases the waste of food and loss of vital force, and consequently of fat, flesh, or milk, is very large, and is one of the largest leaks of the farm. Water coming from a well or spring at a temperature of 50° to 55°, and drank at this temperature will not chill an animal, hut refresh and invigorate it. But if the water is not freshly drawn, and the trough is covered with ice, it chills the animals thoroughly, and they will not drink as much as they need. A water trough that may he kept free from ice and snow is shown in the engraving.

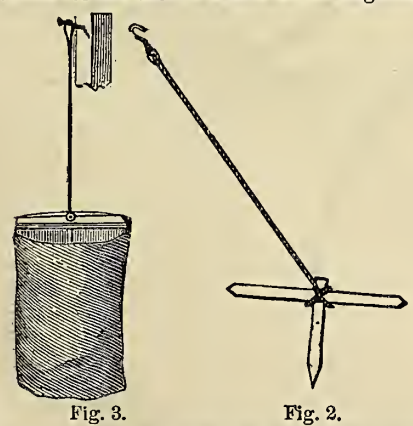


Fig. 3. Fig. 2.

It is suspended on pins at the ends, fitted in posts as shown in figure 1. When not in use, it may be turned over and kept free from snow, and as the trough is empty, no ice can form in it. For the purpose of turning it over easily a handle, *a*, is fixed to one end, and when not in use is fastened to the fence hy a wire loop or a hook, thus easily preventing the trough from being inverted hy accident.

A BAG HOLDER that may be made and applied in

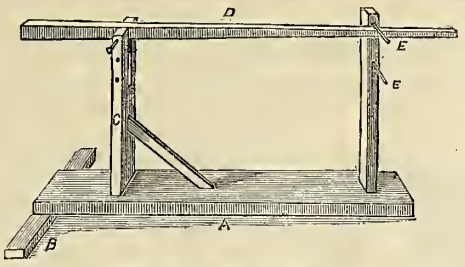


Fig. 4.—WAGON JACK.

a few minutes is shown at figures 2 and 3. Figure 2 represents two pieces of wood joined, and suspended hy a cord or light rope, as made plain hy the engraving. At figure 3 is a bag held open by the holder and suspended hy the cord. By the use of this simple contrivance, one person can, without help, fill a hag in the easiest manner.

WAGON JACKS.—Clarence Hollins, Todd Co., Ky., sends a sketch and description of still another Jack, which is shown in figure 4. The piece, *A*, is made of oak or other strong wood, and should he five feet long, six inches wide, and two inches in thickness. The cross-bar, *B*, is to keep the jack upright. The portion *C*, is 26 in. high; *E*, *E*, are pins to keep the lever, *D*, down. This Jack is easily understood. The engraving tells the whole story.

WAGON JACK No. 2 comes from S. P. Harrington,

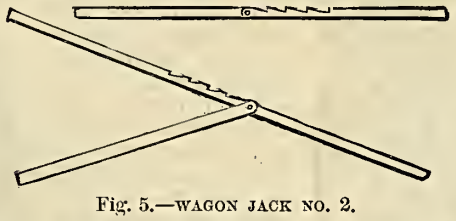


Fig. 5.—WAGON JACK NO. 2.

Marion Co., Ind., who has used it for 12 years, and finds it in every way satisfactory. Its construction is simple: Take a piece of hard-wood 1¼ in. thick and 2¼ in. wide, 5 feet long; another piece of the same size 2 ft. 8 in. long is fastened to the long one, near its middle, by a holt. In using the Jack take hold of the long piece, and putting it under the axle at one of the notches, raise the wheel, when the short piece follows it up and holds it in place. When the wheel is to he lowered, the lever is raised a little, the short piece is pushed back with the foot, and the work is done. The jack appears to be handy, and is certainly easily made and cheap.

Barn-door Fastenings.

A number of years ago, the writer had a colt that was uncommonly crafty, and soon became an expert in opening harn and stable doors. The door to the horse-stahle, was fastened hy a sliding wooden har (fig. 1), moved by an out-standing pin; this door was easily opened hy the colt, until a hickory spring was put on the holt, which kept it firmly in place. A contrivance like this, makes the fastening a self-acting one, when the door is swung closed. The door to the adjoining harn, opened by a latch string, (fig. 2), and this the rogue found, and could grasp with his teeth, and pull down, when the door would open. For a time we pushed the strap through the hole, but this, though it kept the colt out, made it difficult for us to open it. We soon thought of putting a strip of board—a sort of awning—over the strap, as shown in figure 3, and this proved effectual in preventing the colt's proceedings. Any further efforts of his were unavailing. The old hand-hole and hook fastening, is one that is very safe, and quite convenient. As

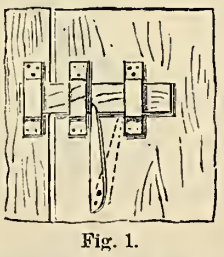
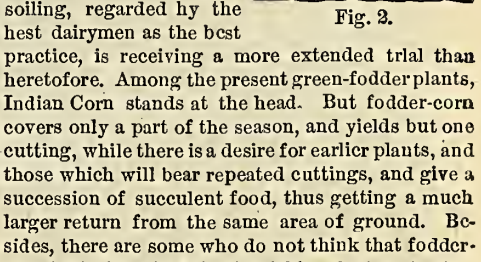


Fig. 1.

shown in figure 4, it consists of an iron hook, attached near the inner edge of the door, and is hooked to the casing by the hand, which passes through the hole, when hooked from the out-side. There may he an objection to this method of fastening, because it leaves an opening for wind to pass in. This may be remedied by tacking a piece of leather over the hand-hole, leaving the bottom unfastened.

Fodder Plants—"Teosinte."

At no former period has there heen so much interest felt by our farmers in plants producing green fodder, as during the past two or three years. This interest is wide spread, and extends not only north and south, hut, as our correspondence shows, from Nova Scotia to Washington Territory. This is a gratifying feature in the present condition of our agriculture, as it shows a disposition to get out of old ruts, and to ascertain if there is really anything better than we now have, and also indicates that soiling, regarded hy the best dairymen as the best practice, is receiving a more extended trial than heretofore. Among the present green-fodder plants, Indian Corn stands at the head. But fodder-corn covers only a part of the season, and yields but one cutting, while there is a desire for earlier plants, and those which will bear repeated cuttings, and give a succession of succulent food, thus getting a much larger return from the same area of ground. Besides, there are some who do not think that fodder-corn is the best food for furnishing the best butter; not so much that it imparts an unpleasant flavor to the butter, as that it fails to give the butter that peculiar aroma that comes from the best pasturage. But those who have tried Indian Corn as a green fodder, find it to possess so many advantages, that they are not likely to abandon it, until something decidedly hetter is brought to their knowledge, and they have tested its value. Is there anything that is, on the whole, hetter?—We are not prepared to answer this question; hut with a view of reaching an answer, we have, in the past two or three years, brought to notice, figured and described, the various new plants—or new to use—as they have come to our knowledge, giving such statements in regard to them as were to be procured. We have had the various kinds of Durra, Guinea-grass, Prickly Comfrey, Pearl Millet, and others, each one of which has shown its value in some localities. That we shall find another plant that will be so generally and widely valuable as Indian Corn is not to be expected. Nor is it to he expected that a plant that will give five or six cuttings in the season in the Cotton States, will be equally productive in Maine. Still, take the trials that have been made, the country through, they have been on the whole useful, and the more so, perhaps, the farther south they



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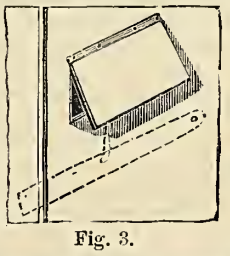


Fig. 3.

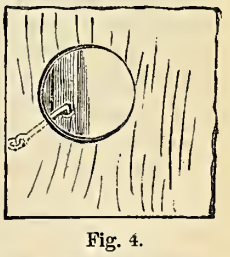


Fig. 4.

have been made. Among the various new plants is one we have not yet noticed, "Teosinte"; though the seeds of it were offered last spring by Mr. Carson, there was but little to he learned about it. The seeds have been sent from the Royal Gardens, at Kew, England, to various British Colonies, including the Bahamas and the West Indies generally, Cyprus, South and Tropical Africa, and Australia. The reports from most of these localities, and others, have been favorable, almost to extravagance. Sir Joseph Hooker, the Curator of Kew, kindly sent us a packet of the seeds, and a trial showed us that while the plant can hardly he of great value in northern localities, it is evidently of wonderful promise for the Southern States. The recently re-

eeived Report of Kew Gardens has figures of the plant, which eame to perfeetion at Kew, under glass.

The luxurianee of the plant, even with us, is something remarkable. A single seed produeed 12 or more stalks, very leafy, and of a dark green, and a rankness of growth, indieating that it would like to have a hot and long season, just to show what it eonld do if it had a ehanee. Our plants were but

Fig. 1.—"TEOSINTE" (*Euchlæana luxurians.*)

five or six feet high, while it reaehes, when fully developed, 12 feet or more. The plant was first introduced as *Reana luxurians*, but aecording to Hooker, its proper name is *Euchlæana luxurians;* its speeifie name is deseriptive, as it would be difficult to find a plant of a more luxuriant appearanee. To the botanist the *Euchlæana* is of great interest; it is a near relative of Maize, produeing, like that, its staminate flowers in a "tassel" at the top of the plant, as shown in figure 1, taken from the plant at Kew. It also, like eorn, has its pistillate flowers at the nodes—or joints below, inelosed in a leafy involnere, or "husk." But there the elose resemblanee ends. In the eorn, the pistillate flowers and seeds are in many rows upon a short branch (or eob), in this they are elosely plaeed in rows npon slender braneh es or spikes, one of whieh is shown at the upper left hand, in figure 2; whieh gives the appearanee of the "ear," within whieh is lnelosed a number of sueh small spikes. We ean only say that the reports made to Kew from several hot eountries to whieh seeds had been sent, are sueh as to warrant a thorough trial of the "Teosinte" in our Southern States. Dr. Sanders, in Madras, put in the seeds at five feet apart; soon the plants so spread that they all touehed, the produee of some single seeds being 100 to 120 stalks, and suggests that it would be a valuable fodder for elephants! The report from Australia states that it withstands the severest drouths. Being a perennial, it will allow of repeated euttings, and we judge that the amount of fodder that an aere of "Teosinte" will produee in a favorite elimate is something enormous. Caution.—Observe that what we have said applies to the plant in tropieal and subtropieal climates, and we doubt that it will be valuable north of Virginia, if even so far north as that.

Cut-Leaved Trees—Paper-Mulberry.

Among the variations from the usual form, of whieh our ornamental trees and shrubs are eapable, none are more popular than those called "Cut-leaved," and sometimes "Fern-leaved." On most trees and shrubs, the leaves eonsist, as may be easily seen, of a frame-work of fibres, the spaees between whieh are filled up with a, usually, dark green pulpy matter. This soft substanee is the part removed in making "skeleton leaves." The fibres of leaves, when large, are ealled "ribs," and these, in most leaves, are arranged on two prineipal plans. A main rib starts from the base of the leaf, where that joins the foot-stalk or petiole, or if there be no petiole, where it joins the stem, and runs direetly throngh, to the point, dividing the leaf into two, more or less, equal parts. From this, whieh is called the "mid-rib," start smaller fibres, or veins, and run more or less direetly towards the margin. In other leaves there is no mid-rib, but there are three, five, or more strong ribs, starting from the base to the eireumferenee. The first class of leaves are called *pinnately-veined* (like a feather), and the other *palmately*, (like the hand with out-spread fingers), or *radiately-veined*. In the first case, the leaf is usually longer than broad, while in the radiately-veined-leaf, its shape will be more or less rounded in form, like the leaf of the Maple. In some leaves, the margin is entire, but as is well-known, they present every variety of division, from a mere notching of the margin, to those where the divisions extend far into the substanee of the leaf. Examples of trees, whieh have leaves mueh divided in their ordinary condition are uot rare, but these are not ineluded under the term "eut-leaved," that term is applied to departures from the normal form. The ordinary Sumaeh has its long leaves, di ided into many (11 to 30) leaflets, but we do not call this "eut-leaved," as it is its natural form, but when the leaflets themselves beeome divided, it is then the "Cut-leaved," or "Fern-leaved" Sumaeh, and one of the most beautiful shrubs in existenee. These unusual forms of leaves are due, so to speak, to a deficiency of their green or pulpy portion: there is not sufficient to fill up the spaees between the frame-work, and what there is, elings to the ribs or veins, leaving open spaees between. Henee the "eutting" will follow the direetion of the fibrous framework of the leaf, and the mueh "eut," pinnately-veined leaf, will produee a very different form from the radiate-veined one. It is in the deteeting and propagating such unusual forms as eut-leaved trees and shrubs, that the horticulturist finds one of his ehief pleasures. So far as we know, there is no method by whieh these interesting, and often elegant forms, may be produeed at will. They are usually mani-

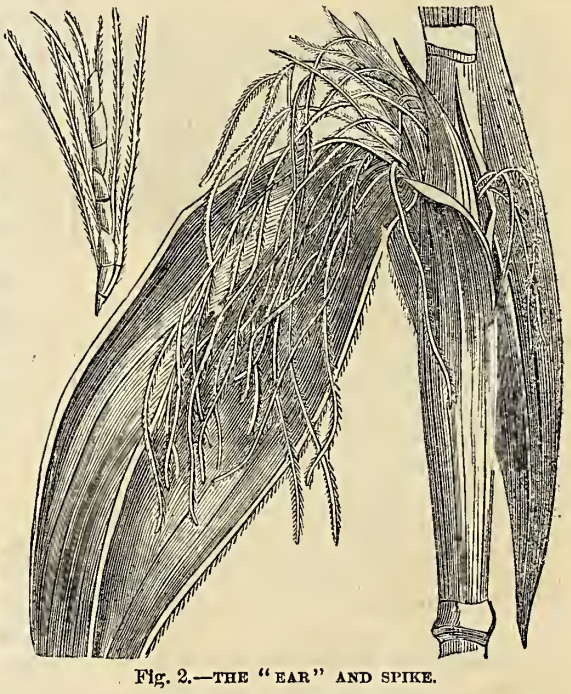
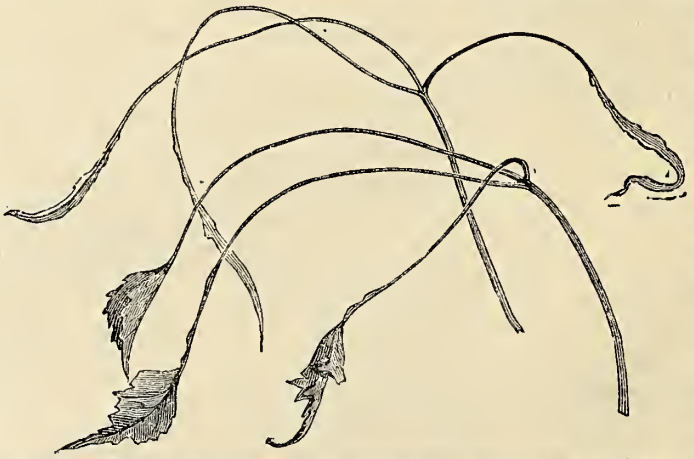


Fig. 2.—THE "EAR" AND SPIKE.

fested by the young seedling—'Congenital deformity" we should call it in an animal, and kill the young creature at its birth; but in the plant, we eherish and propagate it. Some trees when they first start from the seed, or when they push up a vigorous shoot from a stump, after the tree has been eut down, produee leaves, unlike those of the mature growth. The *Paulownia*, *Catalpa*, and others, produee on young shoots, leaves of enormous size. The eommon Paper-Mulberry, (*Broussonetia papyrifera*), under sueh eonditions, has not only unusually large leaves, but those singularly and often grotesquely lobed and eut; but these peculiarities disappear after the stem is a year or so old, and may be regarded as a condition of infaney. But a variety of this tree has been raised in Franee, from seed, by M. Billard, whieh is, to judge from the figures published in *Revue Horticole*, one of the most striking of all eut-leaved trees. In the engraving here reproduced from the above named journal, are shown two of the leaves, whieh it will be seen are little more than skeletons. In the normal form, the leaf is somewhat heart-shaped, with three strong radiate veins from the base. In this variety, all the pulpy portion is gone, save a very small quantity at the ends of eaeh of the three veins. Evidently there was not material enough to carry out the plan of the leaf. This variety is named var. *Billardi*, and has not, so for as we are aware, yet been offered for sale by the nurserymen of this country



THE CUT-LEAVED PAPER-MULBERRY (*Broussonetia papyrifera*, var. *Billardi*).

The Two-Colored Bush-Clover.

The great value of hardy late blooming plants in our climate has rarely been so strikingly manifested as it was last autumn. Two or three sharp frosts took away the very tender things, after which the hardy late bloomers had it all their own way for some weeks. The Two-colored Bush-Clover which has been for some years a favorite with us, showed how well it deserved our partiality by holding out to the very last, and bloomed until checked by exhaustion rather than stopped by the cold. The title given above is a translation of its botanical name *Lespedeza bicolor*. The genus *Lespedeza*, so named in honor of Lespedez, one of the Spanish governors of Florida, is one of the large Pea Family (*Leguminosæ*); its neat three-parted leaves and very small flowers (though not in close heads) are enough like those of clover to warrant the common name of Bush-Clover. There are several species found in most parts of this country, but as none are very showy they rarely attract the attention of any but botanists. The species in question, *L. bicolor*, comes from the region of the Amoor river in Northern Asia. It forms a much branching half shrubby plant from three to five feet high; its branches being long and slender, droop at their extremities, giving the mass a most graceful appearance; the stems and foliage are of a very pale green, being covered, at least when young, with light silky hairs. The flowers, shown of the real size in the engraving, are in sufficient numbers to compensate for their small size, as they quite clothe the branches. In color they are of a delicate tint of rose, which may be described as violet rose. The general effect of the plant, the modest flowers combined with, rather than contrasted with, the subdued color of the leaves, is most pleasing. Not the least of its good qualities is its long endurance; beginning in August, it remains in flower until the time of killing frosts, and is a capital addition to our late-blooming plants. This Lespedeza is given in the European journals and horticultural works as a shrub; it is shrub-like in habit, but not in duration. The stems, though quite strong and woody, die down nearly or quite to the ground at the end of the season, new ones appearing the next spring, and growing rapidly. It is really a herbaceous perennial rather than a shrub, and as would be inferred from its far northern origin, is perfectly hardy. It is not particular about soil, and is easily multiplied by cuttings. We received this plant as *Desmodium penduliflorum*, and there seems to be much confusion between the two, *Desmodium* and *Lespedeza*, in European collections.

THE TWO-COLORED BUSH-CLOVER (*Lespedeza bicolor*).

TUBEROUS-ROOTED BEGONIAS.

The Tuberous-Rooted Begonias.

While planting in bedding designs, or as the French call it, "Mosaic planting," with Coleuses and other plants with colored foliage has been successfully done in this country, the attempts to produce similar effects with flowers have rarely been satisfactory. This general failure is due to following English examples. Exeellent designs, with the plants to be used in carrying them out, have been given in the English journals, but au attempt to reproduce these with the same materials, in this country, have been mostly miserable failures. The difference in the climate of the two countries will account for this. Plants that in the moist climate of England will bloom all summer, with us have a very short flowering season and are done with. For garden decoration of this kind, the working out of designs with flowers, we must find a very different set of plants from those used abroad. While our hot summers make most of the plants used for this work in England, unavailable with us, we, on the other hand, can employ those which the English gardener would not think of putting in the open ground. Among the plants with brilliant flowers, especially suited to our summers, are the Tuberous-Rooted Begonias, especially the hybrids. The genus *Begonia* is a very large one, and its numerous species, natives mostly of South America and tropical Asia, present such a diversity, that there are several distinct groups. One section, of which *Begonia Rex* is an example, has very short stems and insignificant flowers, but most beautiful leaves, and are solely cultivated for the ornamental character of their foliage. Another set, represented by the beautiful *B. hybrida multiflora*, are profuse bloomers and are among the most popular winter flowering plants. Not many years ago there were introduced several species different from others in habit, in producing a large tuber at the base of the stem; these, their flowering season being over, stopped growth, dying down to the tuber, which, after a season of rest, was started anew. *B. Boliviensis*, *B. Vietchi*, and *B. Frocheli*, and others, are South American species of this group. Soon after the Tuberous-Rooted species came into cultivation, it was found that they hybridized with the greatest ease, and that the resulting hybrids often excelled the original species in the size and brilliant coloring of their flowers; they are now among the most popular plants abroad, and are rapidly coming into favor as they are better known in this country. The plants have generally a good habit, grow from one to two feet high, and produce the greatest profusion of flowers, differing widely in size and shape, and presenting a wide range of colors, which are clear and well defined, and often remarkably brilliant. The engraving, made up of a collection from a number of these new hybrids, shows all that a wood-cut can give, the shape and relative size of the flowers, and whether they are dark or light; the brilliancy in some, and the delicate tinting in others, we can not give; they are given here at about half their real size, and are of every shade, from pure white through the most delicate rose and pink to the deepest shades of crimson and scarlet,

and on the other hand from the most delicate cream and sulphur colors up to the deepest orange. In many the leaves are very elegant, not only in form, but they are often handsomely veined and tinted. The catalogues of the European dealers offer about a hundred named varieties, and though the lists of our florists are not so full, they offer a good selection at moderate prices. Not the least of the merits of the Tuberous Begonias is the ease with which they are raised, and if one can get seeds of a good strain, plants quite as fine as the named varieties may be produced. A pot of good, rich, light soil should be prepared; the very fine seeds are to be sprinkled over the surface, and merely pressed down into the soil; cover the top of the pot with a pane of glass, and keep in a temperature of 50° to 60°. When the plants are large enough to handle, pot them off into similar soil. Started in February, and well cared for, the plants will be large enough to turn into the open ground and flower the same summer. They may be kept in pots to bloom in the greenhouse, for the decorating of which in summer they are especially valuable. They are essentially summer-bloomers, and when their bloom diminishes the water should be gradually withheld, the tops allowed to die down, and the tubers allowed to ripen; these may be kept in the earth, or taken out and preserved in a warm place until spring, when they are to be potted and started into new growth.

What is the Black Knot?

The conspicuous excrescence often found upon Plum, and wild, and cultivated Cherry trees, and well named the *Black Knot*, is an old enemy to the fruit-grower. From its destructive nature it early received the attention of scientific men, and much has been written and said upon this subject, in fact, much more than was really known. Some have claimed that the knot was caused by insect stings, a form of gall, in nature like those on the oak, willow, etc. The fact that the knots—especially the old ones—frequently contain insects and their eggs, remains, etc., was accepted as evidence that such was the case. Though many investigators have found a fungus present in the knot; it having been first described by Schweinitz, in 1838, yet, until the recent, and thorough investigations made by Professor Farlow of Harvard University, all doubt of fungus origin was not cleared away. The following are his reasons for believing that the knot is not caused by insects: "First the knots do not resemble the galls made by any known insects. Secondly, although insects, or remains of insects are generally found in old knots, in most cases, no insects at all are found in them when young. Thirdly, the insects that have been found by entomologists in the knots, are not all of one species, but of several different species, which are also found on trees that are never affected by the knot. On the other hand, we never have the Black Knot, without the *Sphæria morbosa*, [The scientific name of the fungus. ED.].. and the mycelium of that fungus, is found in the slightly swollen stem, long before anything that could be called a knot, has made its appearance on the branch; and furthermore, is not known to occur anywhere except in connection with the knots."

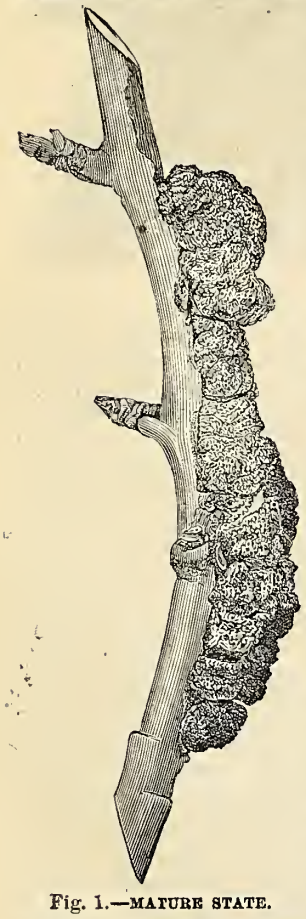


Fig. 1.—MATURE STATE.

Fig. 2.—YOUNG STATE OF THE BLACK KNOT.

The Black Knot is most conspicuous in the winter season, when the trees are not covered with foliage, and they range in size, from half an inch, to a foot or so in length. The knot does not usually surround the branch on all sides, but growing from one side, often causes the branch to bend away from that side, or twist into an irregular shape. A knot, much reduced in size, is shown in figure 1, with its surface undulating, and more or less cracked. When the knot is a large one, it usually kills the branch, or continues to spread up and down from the old knot, until death comes to the branch. Figure 2 shows the Knot in its early stages. In the spring the affected part increases rapidly in size—one might almost say puffs out—and the whole, growing larger, becomes thick and is soft; rupture of the bark soon follows, and the soft substance, coming to the surface, expands rapidly, and is soon coated with a characteristic greenish color. All this time the threads of the fungus have been increasing rapidly; in fact, the swollen substance is made up largely of these threads, and as they develop and become exposed by the rupture of the bark, multitudes of spores form on the interior filaments. Fgure 3 shows a thin section or slice through the young knot, with the exterior threads of the fungus, producing small spores, *a*, *a*. The same is seen more highly magnified in figure 4. This takes place about the time the cherry and plum trees are in flower. These spores continue to be formed, until midsummer, when a new development begins, which is for the production of the winter spores. As autumn approaches, the black color develops, the outer surface hardens, and frequently the interior soft substance is destroyed by insects, and only a shell remains. In this crust, are small nodules, or protuberances, one of which is shown in figure 5. These nodules are pits, on the inside of which a multitude of small sacs are attached. Figure 6 shows two of these sacs, in each of which are eight spores, the universal number in this species of fungus. These spores are not fully developed, until very late in the season. The Choke Cherry (*Prunus Virginiana*) is a favorite home for the Black Knot, as the neglected fence rows in winter show. Next to the choke cherry, in the severity of its attacks, are the cultivated varieties of cherries and plums. "The Morello Cherry is more susceptible than any other variety, and next in order comes the Mazzard." Some varieties are free from the knot.

Fig. 3.

Fig. 4.

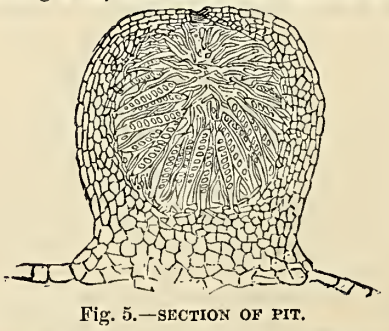


Fig. 5.—SECTION OF PIT.

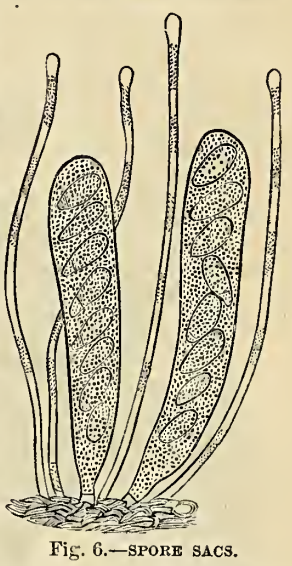
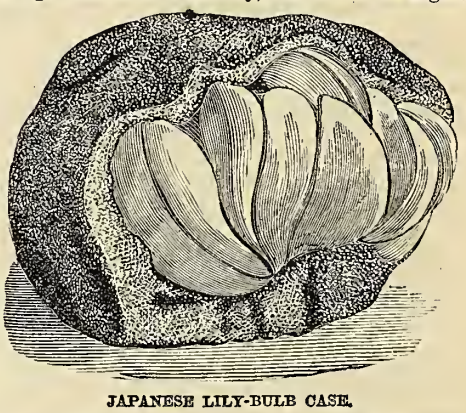


Fig. 6.—SPORE SACS.

REMEDY.—Like all troubles caused by fungi, the Black Knot is contagious, and is propagated by the millions of spores it produces, one crop of which is developed through the spring and summer, and the other in the late autumn. The knife is *the* remedy. Cut off the knots, wherever, and whenever found, and burn them. This can best be done in autumn, after the leaves have fallen, and the knots are exposed to view. The Choke Cherry bushes and trees, might better be cleared away entirely, if situated near pear or cherry orchards.

How the Japanese Pack Bulbs.

Travellers in Japan, give interesting accounts of the gardens of that country, and tell of the ingenious appliances, such as shades made of bamboo strips, and greenhouses covered with paper, so prepared as to serve as a substitute for glass. The specimens that come to us, show that they are well advanced in the art of horticulture. We saw the first of the beautiful Japanese Maples that came to this country, and these, as well as other plants, showed, that in grafting, they had little to learn from us. We were recently at the opening of a case of lily bulbs, just imported, and these were packed in a manner that showed not only great care, but a knowledge of the requirements of the bulbs. The bulbs in question were remarkably fine ones, of the golden-banded lily, *Lilium auratum*. Upon opening the case, only large flattened balls of dried mud were to be seen. Each bulb was enveloped by a covering of what appeared to be dried



JAPANESE LILY-BULB CASE.

swamp muck. The bulbs had each been thoroughly covered when the earth was moist and plastic; this was worked around the bulb by the hand, to fill all the interstices among the scales, then well formed and smoothed, and afterwards dried. When this covering was removed, the perfect condition of the bulb showed that the Japanese well understood what was required for their safe transportation. The engraving shows the appearance of the bulb, with a portion of its covering removed.

Woodchucks in the Garden.

The woodchuck, (*Arctomys Monax*), is one of the most troublesome pests of the farm and garden. Though exceedingly shy, he not infrequently prepares his burrow in some corner of the garden. His favorite food, in the meadow, is clover, and the amount of this food a community of woodchucks will destroy, is enormous. In the garden, his favorite food is lettuce, cabbage, and beans. His presence is generally indicated in the early spring, by the mysterious disappearance of the leaves of young cabbage, just transplanted, so that the gardener is in doubt for a time, whether the woodchuck, or the worms have been foraging. A little watching at noon, or just at evening, from a safe distance, generally reveals the intruder with head erect, on the lookout for his enemies. There is no safety for anything in the garden, while this pest is abroad. The mouth of his burrow is usually in a bank, or side-hill, or stone-wall, has many apartments, and several openings, so that it is almost impossible to drown him, or smoke him out. It is not easy to trap him, and his ear is so quick to catch the slightest sound, that it is difficult to get near enough to shoot him. Having suffered much from these visitors in years past, we determined, this season, to try a new remedy. Noticing that the young cabbage disappeared regularly every day, we transplanted a large cabbage, with leaves six or eight inches long, in his favorite feeding ground. The leaves were dusted over with Paris Green. The second day after the transplanting, the most of the heads disappeared. The third day, we found near the mouth of the burrow, a large female woodchuck dead. We continued the experiment for a few days about the mouths of the burrow, and the depredations entirely ceased. This is altogether the cheapest, and surest method of destroying the pests, that we have ever tried. Paris Green is in almost universal use for destroying potato bugs, and every farmer can avail himself of this remedy, with very little trouble. Of course the same precautions are to be used in poisoning woodchucks, as potato bugs. A dime expended in Paris Green, will save many dollars worth of vegetables. CONNECTICUT.

The Plant Individual.

When we look at one of the higher animals, it is evident that we see an individual—a single *unit* of the kind—a whole not capable of living in a divided state. We get our idea of an individual from such forms of life because here it is the most distinct and therefore evident. As we descend in the scale of animal life, the evidence of individuality diminishes, until we come to forms where it is entirely swallowed up, and only communities or congregations of individuals are seen. For example, in the coral we find a number of units joined together through life. Among plants the individual is still more difficult to observe, and is a point upon which there has been considerable discussion. Some have held, that all which comes from a single seed is an individual. This would make some units very large indeed. All plants not propagated by seed, as the various varieties of apples, pears, potatoes, etc., etc., according to this view, would consist of single individuals. All Baldwin apple-trees would belong to the same individual. This limit for the plant unit is too broad, and will not answer. Another, and the generally accepted, view is that a plant individual consists of the smallest part which in general will live and grow when separated from its former place and given fitting conditions for growth by itself. The gardener, in making a cutting of a geranium or verbena, for example, takes a portion of the stem containing a bud—it may be very small—and places it in the sand. A man in grafting, fastens a similar portion of one kind of plant in another. Such a portion is now considered the plant individual. In this light a tree or shrub is not a plant unit, but rather a single plant community in which the individuals are united in a common work, and in great measure dependent on each other, because a division of labor is maintained.

We speak of a maple tree as an individual, but it is so only, as a swarm of bees is a unit of life; in fact, we can find considerable similarity between the tree and the hive. The bulk of the plant is made up of the ordinary foliar units, which have no sexual organs developed, and are for the elaboration, formation, gathering so to speak, of the nourishment of the whole community—the plant hive—they are the *workers*, and *neuters*. Other individuals are devoted to the work of producing new colonies, namely, the stamens in the flowers, which perish as soon as their work of fertilizing the pistils is accomplished; these are the *drones*. The *queen* of the plant hive is the pistil, in which seeds develop, and when mature, are ready to separate from the parent, and form a new and independent plant colony. A large growing tree is a vast and constantly increasing community of plant units, each consisting of a bud and a portion of the stem which bears it.

Impeachment of the Robin.

The robin (*Turdus migratorius*) is the favorite bird of the Northern States, coming early in the spring, and leaving only with the killing frosts of autumn. He is not infrequently seen in mid-winter, in mild seasons, amid the boughs of red cedar, or other evergreens in sheltered places. We hardly know the secret of his popularity; for he is not more beautiful than many other birds, has no sweeter song, is no more useful, but the greatest pest. We are sorry to disturb the confidence of cultivators in this favorite bird, but after the observation of several years, we are obliged to put him down among the pests of the garden. Last spring a flock of robins settled in the vicinity of my garden. Their first depredations were upon the strawberry bed, where they gorged themselves with luscious Monarch of the West, and picked and marred more than they ate, until I invested in an old fish seine, which covered the bed. As the green peas swelled in the pod and became large enough for a side dish with roast lamb, they tore open the pods, and scooped the contents. I admired their taste, but was vexed at the daily thefts. When the cherries turned red they perched in the tree tops and sung their songs as gaily as if they never looked at the cherries below. They devoured pecks of them and never said a word about the theft. When the currants ripened the robins seemed to invite all their neighbors to the feast, probably because I had fought currant worms for three years, and had a good crop, while my neighbor's bushes had been killed by these insects. The birds took the better half of my crop. I thought there might be some rest after the small fruits were gone. But when the Beurre Giffard pears ripened in early August, the robins punctured every red cheek, selecting the handsomest fruit, with the eye of an epicure. They followed the pears steadily for three months, living upon the fat of the land, and only spared the winter pears because they were too hard for their taste. They visited the grape trellises as soon as the fruit was ripe and followed them until frost came. What have I in return for this wholesale depredation? Absolutely nothing which I cannot get cheaper elsewhere. Insects destroyed, you suggest? Not much. They did not clean my currant bushes of worms. Hellebore did that. They did not clean my apple, cherry and elm trees of canker worms. Tar did that, effectually. Well, they sung, you say. Yes, but I have better and cheaper music in the house. I see no good reason why this pest should be spared and cultivated. So next season when it is inquired: Who killed Cock Robin? the answer will not be "I, said the Sparrow, with my bow and arrow," but "I, Connecticut's son, with my two-barreled shot-gun."

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Holder for Wisp Broom.

A design for making a handy and useful article is here given. It is a holder for the wisp, or short-handled broom-corn clothes brush, so generally in use. The holder is cut from Bristol board; it may be all in one piece, and folded in the middle, or of two similar pieces, each forming a side, with their edges fastened together with ribbons or any other way that fancy may suggest. It is then hung

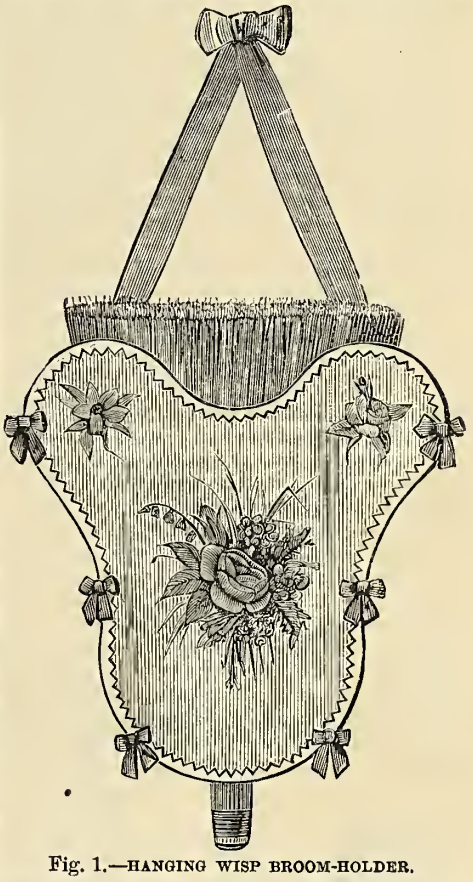


Fig. 1.—HANGING WISP BROOM-HOLDER.

for use by two or four strings. In figure 1 is shown the appearance, as regards general shape, etc., when complete. It will be seen that the holder is open at the top and bottom, and that the brush is put in at the top, handle down, and when desired it is drawn out through the bottom. The side may be ornamented as one may fancy. We saw some at a recent fair, with the injunction, "Brush your clothes," wrought in letters and curves upon the side. But this is rather superfluous, and suggests that the person addressed is not neat in his habits. We see no reason why the holder could not be fastened to the wall by one side, and thus do away with the strings. A case for carrying the broom when travelling is shown in the second engraving. Those who are puzzled what little present they can make for a friend, who is going away, have here a

Fig. 2.—TRAVELLING BROOM-HOLDER.

very simple thing, easily made, and which will be in daily use. It is merely two pieces of pasteboard of the same size, fastened together by pasting strips of cloth over their long edges. It is then to be papered neatly, and trimmed as one fancies. It may be ornamented by cutting initials from paper of another color and pasting them on, or these may be put on with water-colors. The size will be ac-

cording to that of the brush, which should be so compressed as to occupy about half its former width. If preferred, the covering may be of embroidery or crochet-work, as the ornamentation may be carried out in considerable variety.

Cleaning Chimneys.

Foul chimneys are at this season a source of great danger; soot is very inflammable, a mere spark will set it on fire. No one knows the condition of his chimneys, what cracks there may be in the brickwork, nor what timbers there may be near those openings through which fire may penetrate. Hence, it is an indispensable caution for every householder to see that the chimneys are swept down, or up, at this season. A chimney may be swept from the bottom by means of a brush made on the end of an elastic pole or rattan cane, as shown at figure 1. The brush may be made of a number of goose or turkey-quills, or splints of hickory or ash, or even small twigs of trees, fastened tightly between two round pieces of thin board or sheet-iron. This brush is fixed to the end of a long, slender, limber pole, or rattan, and is thrust up the chimney from the fireplace. A very light brush and pole only are needed, as the least touch is sufficient to bring down all the soot and dust that may be adhering to the sides of the flue or resting on the slopes of it. When the chimney has been swept for the length of one pole, a second one is spliced to the first, and this is repeated until the whole of the flue is cleaned. To prevent the entrance of the dust into the room, any more than can be avoided, a cloth of some kind should be fastened over the fireplace to confine it in the chimney. The sheet may be held upon the mantelpiece by placing sad-irons upon it, and the workman—a small boy is the best for this purpose—may be covered by the sheet, having the nose and mouth protected by a wetted handkerchief tied over them. This method, however, should only be used when it is not possible to get at the chimney from the top of the house. When this can be done, the work is much less disagreeable. It will be found best in this case to get the brush to the bottom before sweeping, and then work upwards,

Fig. 1.

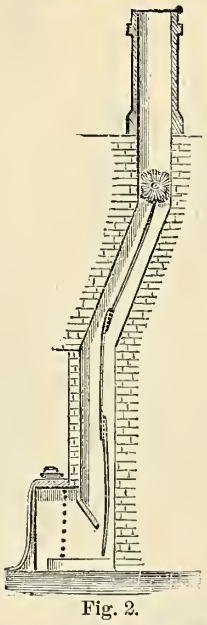
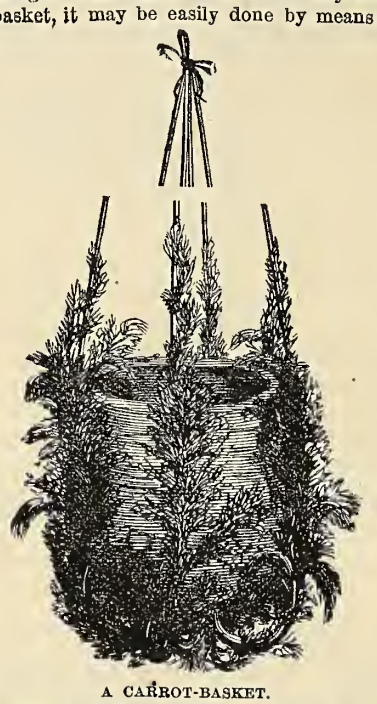


Fig. 2.

lest by beginning to sweep from the top the dust and soot may choke the flue part way down, and thereby cause much trouble to clear the obstruction.

The Carrot-Basket.

A very pretty hanging-basket can be made from four or five inches of the top, or crown part, of a large carrot. The inner portion of this upper end of the carrot is to be removed with a knife, leaving a shell about half an inch thick. Three or four cords are fastened to the rim, and the basket is ready to hang up at a window. The cavity of the basket is to be kept filled with water, and care taken that it does not become dry. After a while the carrot will start into growth, and as the delicate, finely divided leaves appear, they will turn upward on all sides, and soon cover the little basket, with here and there the orange-color of the carrot showing through with good effect. Should the leaves need "training" to arrange them satisfactorily around the basket, it may be easily done by means of a



A CARROT-BASKET.

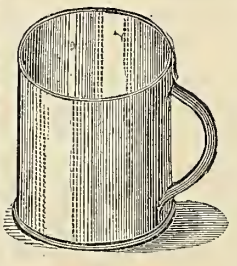
thread passed around them, or a bent pin stuck into the carrot, may be used to hold a leaf in place.

Household Notes and Queries.

PLACE FOR FLOUR.—Flour, like milk, though not so much so, is affected by bad odors of any kind, which it readily absorbs. Hence it should never be kept where vegetables, onions, etc., or fish, and such odorous things are stored. Flour should always be kept in a sweet, dry, cool, and airy room.

PAPER AND STRAW UNDER CARPETS.—In putting down the carpet for the winter, do not forget that a layer of paper should be first spread over the whole floor. Thick, coarse, and porous paper is made for the purpose; it is in a continuous sheet, and may be had at the carpet stores by the yard at a low price. Another material is made of two sheets of brown paper with a thin layer of cotton batting between them. In the absence of these, newspapers will answer about as well, and be much less expensive. Several layers of newspaper may be put down, or a single thickness of papers, over which is placed a thin layer of straw and other papers over this, putting in a tack here and there to keep all in place while putting down the carpet. Either of these will cover all holes and keep out the cold air, while the straw will give a soft surface to walk upon and greatly help to save the carpet.

A USE FOR FRUIT CANS.—Take round fruit, or vegetable, cans and melt off the top; bend a hickory withe for a handle, as shown in the engraving, and fasten it with wire or rivets. This makes a useful dipper, pitcher, measure, or vessel for many purposes about the barn or house; one may be made for the flour barrel; another for the sugar barrel or box; others for feed boxes, grain boxes, and for use in feeding poultry. In short, some 20 or more can be made useful on every farm or in every house, and as many dangerous nuisances, when these are lying about, will be got rid of profitably.



THE CAN CUP.

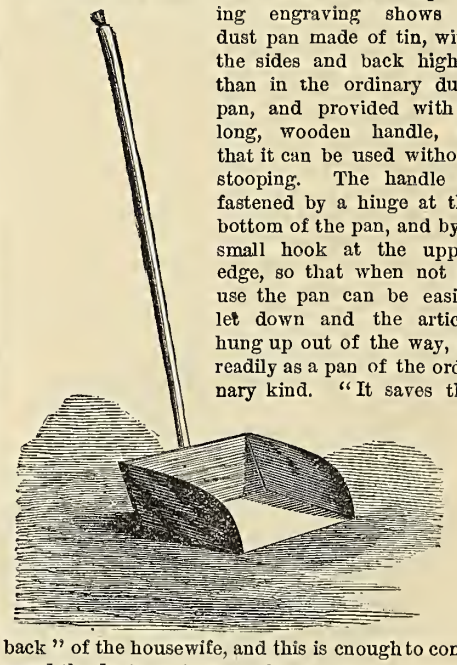
THE PUTTING TOGETHER.—A Michigan lady, Mrs. C. P. F., some of whose recipes have been sent to us, very properly says: There is so much in the putting together the ingredients that I hesitate to send receipes—so much depends upon one's own experience. There are very few who can handle a mere receipe. It makes a great difference just when you add the butter, the sugar, and the flour, and how the mixture is worked. It is no mystery to me that there are so few good cooks. To a very few the right method comes by intuition, but to the most, only by many sad failures, and a life-long watching. I think I am just as anxious about the bread now as I was 15 years ago, and there are some things I cannot see the reason for even now.

ORANGE CAKE.—Miss J. Van I. sends the following: 5 Eggs, 3 cups Sugar, 1 cup Butter, 1 cup Milk, 1 quart Flour, 3 teaspoonfuls Baking Powder. Bake in round tins like thin Washington Cake. Take the grated rind and juice of 2 Oranges, the whites of 3 Eggs, and Sugar to taste—usually less than one cup. Mix well, and spread between each two surfaces of cake, and it will flavor the whole.

WHITE MOUNTAIN CAKE.—Butter, ½ lb.; Sugar, 1 lb.; Flour, 1 lb.; Milk, 1 cup; Yolk of 6 Eggs; Whites of 3 Eggs; Soda, half teaspoonful; Cream of Tartar, 1 teaspoonful. Put the soda into the milk, and cream of tartar into the flour. Put in a little milk, and then a little flour, and so on. Add the whites of the eggs the last thing. Flavor with Lemon. Bake in thin layers, every layer iced, and the top covered with icing. Make the frosting with the white of three eggs and ¾ pound of sugar. Eight layers will be sufficient for ordinary cake.

TEA CAKES.—"Miss A. R.," Grand View, Iowa, recommends the following as very nice. Two cups sour Milk, half a pint each of Shorts and Rye Flour, three Eggs, well beaten, one teaspoon each of Soda and Salt, Butter the size of a hen's egg, mix and bake in gem-pans, those of iron being the best.

A LONG HANDLED DUST PAN.—The accompanying engraving shows a dust pan made of tin, with the sides and back higher than in the ordinary dust pan, and provided with a long, wooden handle, so that it can be used without stooping. The handle is fastened by a hinge at the bottom of the pan, and by a small hook at the upper edge, so that when not in use the pan can be easily let down and the article hung up out of the way, as readily as a pan of the ordinary kind. "It saves the



back" of the housewife, and this is enough to commend the dust pan to general use.

SPLITTING PAPER.—In selecting articles for a scrap-book, it sometimes occurs that one wishes to save the matter that is on both sides of the clipping. This may be done by splitting the paper. Place the paper under a piece of glass, so that it will be smooth, after which it is thoroughly soaked with water, when, with a little care, the upper surface of the paper can be entirely removed. The process is as much a matter of curiosity as utility.

VENTILATION OF ROOMS.—In winter it is one thing to keep dwelling rooms warm, and another to have them well supplied with pure air. There is nothing so abundant in the world as good, wholesome air, and nothing which we so seldom find in sufficient quantity in living rooms. We are apt to forget that air once breathed is not fit to breathe again, and only throw up the window or open the door when the air gets so bad as to cause a feeling of oppression. The air of a room should *never* get noticeably impure. Some rooms are "by nature"

provided with ample ventilation, and through the cracks the pure air finds abundant access, but most apartments, if not looked to, will limit the supply of oxygen and supply its place with the heavy noxious carbonic acid gas, which is the great source of dull head aches and sluggishness of mind and body.

In winter every sleeping room had better be a little cool than not be abundantly supplied with pure air. One should see to this on going to bed, and so adjust the window sash that there will be a proper supply of good air all through the night.

A HANDY TOASTER.—"W.W.B.," Unionville, Md., sends sketches of a Bread Toaster which he considers the best he has used. It is made of stout wire; the part to hold the bread is bent as shown in figure 1. The ends *a*, *b*, being turned to form rings into which the hooks in the handle (fig. 2) fit. The bread is put between

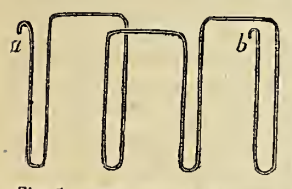


Fig. 1.—THE BREAD FRAME.

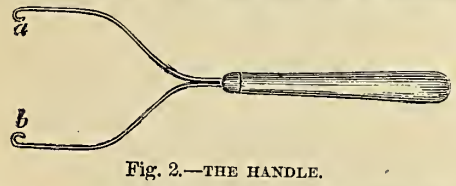


Fig. 2.—THE HANDLE.

the wires and is easily reversed by turning the handle over half way by an easy twist of the wrist.

Carrier for Large Jars or Cans.

Large jars, cans, or kegs, are unwieldy to handle when filled, and it is difficult to pour anything out of them. The French people use a very convenient carrier for the purpose of holding and tilting such vessels. This consists of a bottom board, to which are fixed two sides partly rounded and braced, as shown in the engravings. (See figs. 1 and 2.) Side pieces having a number of holes are fixed to the upright posts of the sides. These are for the purpose of arranging a strap or band to confine and secure the jar at a proper hight. The jar, can, or keg, is placed on the bottom board and fastened. When it is to be tilted to pour out the contents, it is simply rolled over, as shown at figure 2, and may be drained to the last drop. Kegs may be provided with spigots, having the orifice at the end, to be closed with a peg; the keg may then be easily emptied through the spigot without spilling a drop.

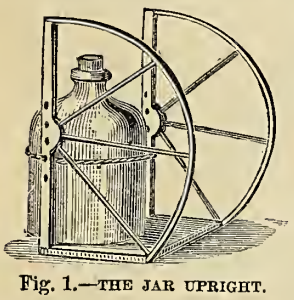


Fig. 1.—THE JAR UPRIGHT.

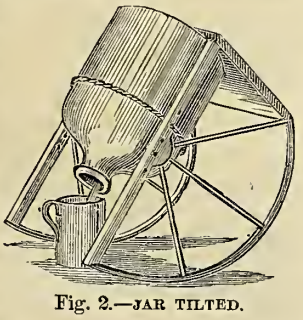


Fig. 2.—JAR TILTED.

Family Wastes.

It is often said, that the wastes of the household would fertilize a half-acre garden, if they were properly saved, and applied. The statement is undoubtedly true, but the if is the most important factor in the proposition. As a matter of fact, most families in the country, and villages, pay the least possible attention to these matters. The sink drain usually pours its contents upon the surface of the ground, within a few feet of the dwelling, and not unfrequently, close by the well. A square rod or two of garden soil, is fattened, and kept soggy with water, and bad odors prevail through the summer. If a pear-tree, or grape-vine, happens to be planted within reach of this liquid manure, the abundant, and perfect fruit, show the value of the riches, that are wasted at this point. There is no burial of offensive matters, no utilizing thereof for the feeding of the soil, and the sustenance of the household. All these gross violations of the conditions of health, and of good husbandry as well, are justly complained of by our Boards of Health. If their Reports could be circulated among those who are most needy of their counsels, it might remedy the evil. Their teachings should be circulated in the journals that reach these families, and secure the needed reform. As a rule, any provision for the disposition of fecal matters, that does not absorb all odors every day, is defective. The most common provision, without a vault for absorbents, is a nuisance that ought to be abated, by civil enactments, with severe penalties.

The earth-closet system is effectual, if faithfully carried out. It needs, however, more executive ability than is ordinarily found in the head of the family, even if he be a cultivator of the soil. The best arrangement, on the whole, that we have observed, is a vault large enough to contain all these wastes for six months of the year, made of stone, or brick, and lined with hydraulic cement. This effectually prevents all escape of poisonous matters into the well; a matter that the head of the household can afford to secure at any cost. By the occasional use of absorbents, all the fertilizing material that falls into the vault is preserved. Offensive odors, if they arise, may be corrected by the use of Copperas. With such a vault, the gardener has a constant fountain of liquid manure, which may be applied to his growing crops through the season. The luxuriant growth of vegetables, the splendid berries, the purple clusters of the vine, and the ruddy cheeks of the pears, grown under frequent applications of liquid manure, will compensate any man for the trouble and expense of this vault.

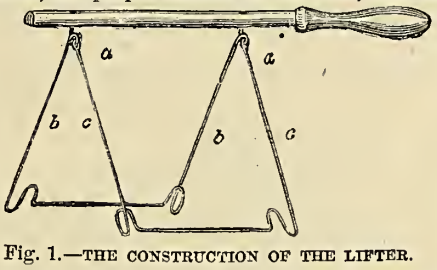


Fig. 1.—THE CONSTRUCTION OF THE LIFTER.

A Pie Lifter.

Mr. R. N. WARING, Blair Co., Pa., sends sketches and description of a pie lifter. "It consists of a wooden handle about 15 inches long, to which are suspended two rectangular claws 5x6 inches, of ⅛ in. steel (or iron) wire. One of these claws is immovable, and is looped near its point of attachment to the handle (*a*, *a*); these loops admit the ends of the claw, as shown in figure 1. In using the lifter, the 'clips' *b*, *b*, of the immovable claw are brought under and against one side of the plate or article to be lifted, then by a twist and a light downward and forward motion of the handle, the clips *c*, *c*, of the movable claw, are brought in position on the other side. The second figure shows the lifter in place for carrying a pie. If properly made it will grasp articles within the reach of its claws, with firmness. I do not think it is patented.

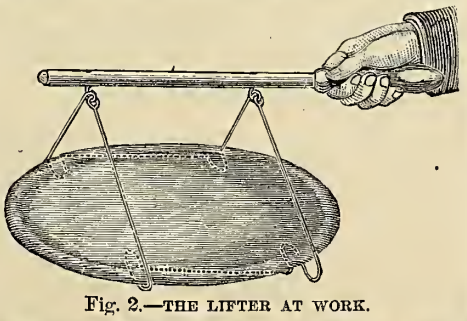


Fig. 2.—THE LIFTER AT WORK.

BOYS & GIRLS' COLUMNS.

The Doctor's Talks.

At the beginning of a new year I would say a word to the new boys and girls:—by "new," I mean those—and there is often a large number, who come into our wide family for the first time. For some months past I have been trying to talk to the youngsters about some things which are seldom taught in ordinary schools, but which every boy, and girl too, should learn while young, else they will be obliged to learn them here and there, and sometimes by experience later in life. I do not think that I have given any distinct name to the subject of these talks. If I should call it "Natural Philosophy," or "Physics," either would prevent many of you from reading them, and they would be too high-sounding for these familliar talks on common things—there, that's it! "Common Things," is the very title I want. These talks on Common Things, then, began by my trying to answer a question about the Centre of Gravity; this made it necessary to talk about Gravity. As Gravity is exercised by all matter, the late talks have been about Matter, and its properties. Matter, as has been explained, does not mean any particular substance or thing, but applies to every thing that our senses can tell us about, everything that occupies space. The principal properties of matter, that is *hardness*, *brittleness*, *elasticity*, and others, have been described, and now we have come to talk

ABOUT MATTER IN MOTION.

If asked what *Motion* is, I think you will not find it difficult to answer—"a change of place." But nothing starts into motion or changes place of itself. You hold a marble in your fingers and drop it, the marble starts into motion and falls to the floor; in this case the motion is caused by the attraction of the earth, or gravity, which has already been described. The marble will remain where it fell for any length of time, but by pushing it with your fingers, you may send it rolling across the floor. You may move in a wagon with rapid motion, and still more rapidly in the railroad cars. A bullet shot from a gun moves still more rapidly.

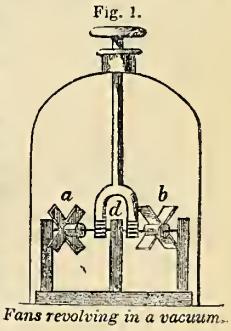
ALL MOTION IS PRODUCED BY FORCE.

And we may describe a force as whatever causes a body to move, or if moving makes it stop. The marble falls by the force of gravity; it goes along the floor by the force of your fingers; the wagon goes along by the force of the horse; the railroad train moves by the force of steam in the locomotive, and the bullet is put in very rapid motion by the force of the powder burnt in the rifle. You will see from these examples that there are various forms of force, but we will not talk about these now, but consider the force as the same, no matter how it is produced. The marble upon the floor will not start into motion of itself. This inability of bodies to start into motion

IS CALLED INERTIA.

Inertia is a Latin word, and means inactivity. When told that inertia describes the fact that a body can not of itself start into motion, you can understand that, but when told that it also expresses the fact that a body in motion can not stop of itself; you will perhaps stop and think about if it can be so. Yet it is the fact that a body in motion can no more stop of itself than it can start of itself. It requires a force to start it, and when once in motion it requires an equal force to stop it. The marble in motion on the floor or the bullet from the rifle having no power to stop themselves would go on forever, were they not stopped by other forces. The marble is stopped in part by the resistance the roughness of the floor offers, and in part by the resistance offered by the air; so the bullet is in part stopped by the resistance of the air, and in part by gravity, for when the bullet is flying with almost lightning speed, gravity is acting upon it and it is all the while falling just as certainly as if it had been merely dropped from the muzzle of the rifle. Those who fire

Fig. 1.



Fans revolving in a vacuum.

AT A LONG RANGE TARGET

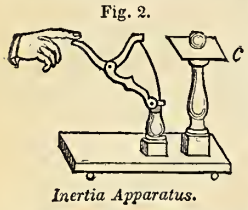
have to take both these influences into account, and to overcome the tendency of gravity to bring the bullet to the ground, must aim far above the target in order to hit it. The resistance of the air to bodies in motion is shown by the arrangement in fig. 1. In this there are two fly-wheels made of thin brass, *a* being placed with the vanes edgewise, and *b* with them flat-wise to the air; *d* is a contrivance for setting them in motion with the same force applied to both. The whole is covered by a large bell of glass. When set in motion, which is done by

pnshing down the knoh at the top, hoth will start off alike, hut soon *b* will "slow up" aud soon stop, while *a* is going on almost as lively as ever. The whole is then placed npon an air-pump, and the air is pumped out of the glass. The wheels are then started, and hoth will continue to go alike, aud one will not stop hefore the other. But you can easily test the resistance the air makes to moving hodies without such an apparatus, hy taking a picce of pastehoard, or even this number of the paper, and move it first edgewise, and then flat-wise against the air. That a hody in motion requires a force to stop it may he shown in a striking manner by trying to stop a grindstone that you have set to turning rapidly, by taking hold of the handle.

FOR ILLUSTRATING INERTIA

there is an old fashioned piece of apparatus, shown in fig. 2. Upon a little pillar at the right hand is placed a card, *c*, and npon this is set a marble. There is a contrivance seen at the other side by which a spring is bent hy a levcr, when that is pressed down hy the finger, the spring is suddenly let go, hits the card, which flies out from under the marhle, leaving that in its place. You can, with a little practice, show the same thing without this arrangement. Place a smooth card, and on this a coiu, like an old fashioned cent, or a silver quarter dollar. Then hit the end of the card a smart fillip by snapping the thumb and finger of the othcr hand in a manner to give the cdge of thc card a sudden blow, when the card will fly out, leaving thc coiu upon the top of the finger. It can he easily learned with a little practice. If the card were slowly pushed, instead of struck a sharp hlow, the motion would he communicated to the coin, aud both would go off together. Inertia, or

Fig. 2.



Inertia Apparatus.

UNWILLINGNESS OF BODIES TO MOVE,

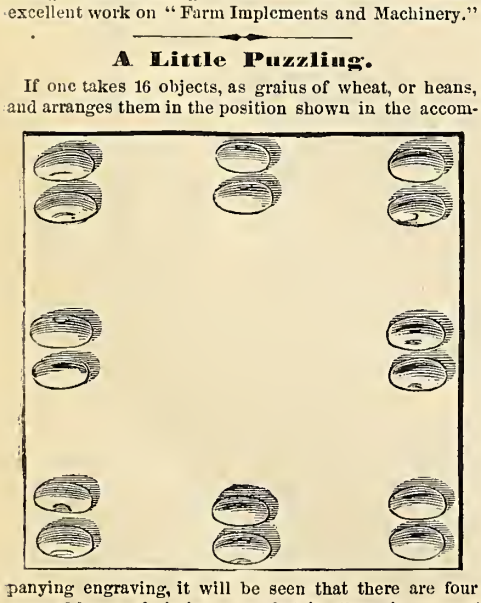
is sometimes unpleasantly illnstrated iu our own bodies. If we are seated in a wagon and the horse starts with a sudden jump, we go with a thump against the back of the seat, or if the seat has no back we fall over hackwards completely. In the same manner if the horse is going rapidly and makes a sudden stop, we are thrown forward. The injuries in some railroad collisious are due to the inertia of moviug bodies. The car coming in collision with other cars, stops very suddenly; the passeugers heing in motion, go forward with great volocity, and heing thrown against one another, and against the seats and sidcs of the cars, causing frightful iujuries. If you quite fill a cup or glass with watcr and move it suddenly, or if carrying a cup or glass and are suddenly stopped, thc liquid in either casc will he spilled. If a hoy throws a stone and hits a window, thc panc will be shattered—as many a boy knows to his sorrow, but if a rifle ball hits thc glass, generally, only a small hole is made, the inertia of the surrounding glass holding it in place, the ball passing so rapidly that motion is not communicated to thc rest of the glass. We will not go heyond this—which is in some books called

THE FIRST LAW OF MOTION,

which is "The inahility of a hody, whether when at rest, or in motion, to change its state." There is more to say about motion, and in the next talk on the subject I can give you more illustrations on this, one of the Common Things. The two here given are from Mr. John J. Thomas' excellent work on "Farm Implements and Machinery."

A Little Puzzling.

If one takes 16 objects, as grains of wheat, or heans, and arranges them in the position shown in the accom-



panying engraving, it will be seen that there are four rows of beans of six in a row, that is—there is a row of six on each side. This may he made clear by simply covering up all hut one side or row. Four more beans, or whatever may be used for the puzzle, are now to be put into these four rows of six in a row, so that there will be no more rows, and no more in each row. If it is thought necessary to move the objects already arranged, the liherty is granted, but rememher that the 20 heans are to he put in four rows of six in a row. Remember that.

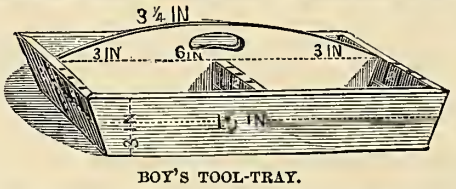
Can a Thing Move and Remain Still?

This question was proposed in May last, as those who have last year's volume can see hy turning to page 193. It was there shown that a figure, which was printed upon the page, could he made to appear to he in rapid motion, while you were all the while sure that it did not move at all. This is only one of many cases in which we do not

see things as they really are, or as it is commonly called "an optical illusion." If we try we can cheat our own eyes and those of othcrs very readily; the illnstration given in May last shows one method, and we have, in former years, given several others. In May there was a single figure of circles within one another. Prof. J. P. Thompson, of Bristol, Eng., has improved upon that in the manner shown by the engraving here given. You have only to lay the paper upon the tahle, or hold it flat hefore you, and move it in a circle, when you will see the whole series of hlack rings going around in a most amusing manner, while the toothed wheel in the center goes in the opposite direction. It will he all the more interesting if yon copy the figure on a white card iu ink, as it is more easily moved than the paper, and other things are not around it to take away the attention.

A Boy's Tool-Tray.

One of our young friends, "W. R. L.," Stottville, N. Y., sends a very neat drawing of a Tool-Tray, together with a very nicely written letter. We have had an en-



BOY'S TOOL-TRAY.

graving made from the sketch, though on a smaller scale, and are sure many of the hoys of the *American Agriculturist* family will be pleased to see Master L.'s Tool-Tray. Most boys have a pocket-knife for their first mechanical tool, and this is carried in the pocket. A hammer usually comes next, and if the work was at all in proportion to the noise it turns out, wonld be a wonderful tool. Other tools are added, some of which go into the all capacious pocket, while others are kept here and there, usually where they were last used—if one could only recollect where that is. As tools accumulate, there must he, after a while, a place to keep them—a chest is hardly needed yet, and a tool-tray will answer at first. Master "W. R. L." thus describes his Tray:—"It is 18 inches long, 12 inches wide, and 3 inches deep. The central division forming the handle, should he 6 inches high in the center, and worked down to 3 inches at each end. In the center of this a picce is sawed out large enough to admit the fingers to pass through, thus allowing the tray to be carried with ease. In one of the two divisions thus formed, another piece is inserted, making two smaller divisions, and in this, as well as at each end of the tray, places are sawed down to the depth of ahont 2 inches, to admit the square, saws, and tools of that kind. By placing the saws and square in these slots, they are always held in their proper places. The other tools may he carried on the other side of the tray."—The Tray should he made of ¾-inch stuff. The measurements are all of the inside.—W. R. says: "I have always been very fond of tools, and have always used them more or less, and this tray is one of my own devising, and I find it very convenient for carrying tools from one place to another on the farm."—Here is a strong argument in favor of parents encouraging the hoys to hecome handy with the tools in the shop, accustoming their hands to make, and their wits to contrive, the many little convenient things that go so far in the farmer's every-day life.

Our Puzzle-Box.

ADDED HEADS.

(To the word which fills the first blank, add a primal letter for the second blank—*e. g.*, "The——made the ——grow finely." "Rain, grain."

1. The little——tore all the——off his sister's dress.
2. We often——through that lovely——.
3. Round the——of the field was a heautiful——.
4. He ran the——into his finger and began to——.
5. The dog had a sore——and was as cross as a——.
6. When I went to the——I took my consin——with me.

STORE-KEEPER'S PUZZLE.

Five letters are all that are needed to form an important request.

The first and last letter name a vegetable.
The second letter is the initial of a large snake.
The third letter is your own initial.
The fourth letter is the initial of the first name of one of our Presidents.
The fifth letter is the same as the first.
Obey the injunction of my whole.

DOUBLE ACROSTIC.

The initials name a famous General, the finals, where he was defeated.

1. Of little breadth.
2. A city in Pennsylvania.
3. A river in North America.
4. A river of Asia.
5. A city in England.
6. The residence of the Spanish Kings.
7. A river of South America.
8. A territory.

JOHN W. WHEATLEY.

CONCEALED BIRDS.

1. I caught the owl in Netley Abbey.
2. Who now rents the Mansion House?
3. The widow Drummond over the way.
4. Her only son keeps it.
5. I think it equal to the very best.
6. Cousin Tom now lets lodgings.
7. He never fails to attend the concerts.
8. Crowds attend nightly.
9. The pond was overgrown with rushes.

ANAGRAMS.

1. Oh! barn feed.
2. Rites ahound.
3. Eminent crape.
4. Rail, O hig chap!
5. Five fines? No!
6. Candle in it.
7. Fine edict.
8. I suit a hore.
9. I snit Bonum.
10. Laird Clincy.

PI.

Eh how snimd tou shi now nihsuses si tou tif ot eh tinduster thiw throe sel'pope.

ALPHABETICAL ARITHMETIC.

```
A R E B ) I T O P L E F ( A B P
         I E F I T
         ---------
         I B T O E
         I A T T F
         ---------
             L T T F
             A R E B
             -------
             R F I T
```

BIBLICAL NUMERICAL ENIGMA.

I am composed of 29 letters:
My 1, 12, 19, 4, 13, 28, 15, was a province of Syria.
My 5, 17, 1, 8, 11, 7, 8, was a Corinthian convert under Paul's preaching.
My 8, 21, 16, 4, 24, 10, 14, is a bird which feeds mostly on winged insects.
My 12, 16, 18, 6, 17, 5, 15, is an evergreen tree.
My 16, 12, 1, 25, 3, 26, 20, is a fallen angel referred to in Revelations.
My 17, 1, 27, 9, 12, 26, 14, is a beautiful natural phenomenon.
My 22, 2, 17, 10, 29, 13, 23, was a reservoir of water at the foot of Mount Zion.
My whole is part of a verse of the Bible.

ISOLA.

ANSWERS TO PUZZLES IN THE NOVEMBER NUMBER.

NUMERICAL ENIGMAS.—1. Honesty is the best policy. 2. Constantinople, in Turkey.

DECAPITATIONS.—1. Wheat, heat. 2. Ebony, bony. 3. Atom, Tom. 4. Turn, urn. 5. Hour, our. 6. Eat, at. 7. Roar, oar.=WEATHER.

METAGRAM.—*Breath*, in which can be found—hear, bat, hart, rat; hat, heat, herb, heart, rate, tar, tea, bar, ear, earth, era, bath, tear, and tare; are, ate, bare, bet, eat, beat; bate, bathe, hate, and hear.

DROP-LETTER PUZZLE.—1. Groundless. 2. Condescension. 3. Procrastination. 4. Impracticable. 5. Incarcerated. 6. Characteristic. 7. Expostulate. 8. Incapacitated. 9. Disciplinarian.

CROSS-WORD.—Be careful.

ANAGRAMS.—1. Incandescent. 2. Anthracite. 3. Torpedoes. 4. Volunteers. 5. Reservoir. 6. Longitudinal. 7. Abstracts. 8. Pilgrimages. 9. Troublesome. 10. Grievances.

ILLUSTRATED REBUS, No. 470.—I show myself deserving of misfortune in deriding it.

A Cocoanut Tree Afloat.

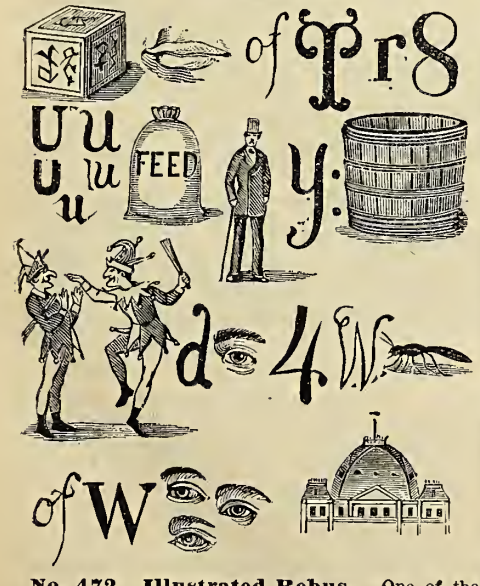
One of our young friends, "T. A. S.," who lives in Jamaica, thinks that the following may interest his "young fellow readers outside of the tropics." How many of you can tell, without looking, what and where Jamaica is? to what country it helongs, and what its principal city?—"T. A. S." has already given you a hint that he lives in "the Tropics." Let us hope that he may tell us more ahout tropical matters. Here is his account:

"Sometime last year, when the harometer indicated foul weather in the vicinity, the inhabitants of a small port in one of the Bahama Isles, had their attention di-

rected to a curious object floating in the offing. Some said it was one thing, some another; at length a boat's crew pulled out to the supposed disabled ship, and what do you think it turned out to be? A large and perfect Cocoanut Tree floating upright in the ocean! heavy rains had probably loosened the soil on some precipitous hillside on the coast of Cuba or Saint Domingo, and the whole tree, with a mass of earth and stones, enclosed by its thickly matted roots, had slid into the sea, or possibly been washed down by a flooded river—the stones and earth entangled in the roots served to keep the tree upright, and the buoyancy of its immense outspread leaves prevented it from sinking. This tree contained a full crop of fruit in every stage of growth and maturity, from the tiny nutlet, smaller than a hen's egg, to the ripe nut ready to be converted into oil, etc., as well as that intermediate stage when the fruit supplies a deliciously cool refreshing drink and soft jelly-like meat, which I am sure my young fellow readers would enjoy if they should pay a visit to Jamaica, or some tropical land."

Forfeits for Fun.

In the evening games of winter gatherings of young people, and older ones too, it often becomes necessary to punish some, one, or more, of the company by imposing a "Forfeit." The penance should be something that either is not easy to follow out to the letter—that is, has some *catch* in it, or puts the person in a conspicuous and amusing light. In all cases a forfeit should be designed to amuse the company as a whole, and never to offend the person called upon to pay it. In order to illustrate our idea of a good forfeit, and also to furnish suggestions to those who enjoy and take part in such pleasant amusements, we give a few of the forfeits that may be imposed. (1) Put a newspaper upon the floor in such a way that two persons can stand on it and not be able to touch each other with their hands.—This forfeit has the honor of being old, but it was not our good fortune to meet it until a short time ago, and was forced to "give it up." By putting the paper in a doorway, one-half inside and the other outside of the room, and closing the door over it the two persons can easily stand upon it and still be beyond each others reach.—(2) To go out of the room with two legs, and come in with six.—Not difficult if one thinks to bring a chair along on the return.—(3) To act the Dumb Servant.—The person who has the forfeit to pay must act out the answers to the questions put by the master of the ceremonies; as, How do you make bread? How do you eat soup? etc. This forfeit will cause much merriment if proper questions are put.—(4) Put one hand where the other can not touch it.—One can get out of this difficulty by putting one hand on the elbow of the other arm.—(5) Place a pencil on the floor so that one can not jump over it.—May be done by putting it close to the wall of the room.—(6) Put a question that no one can answer with a NO!—This is not hard if one thinks to ask, What does Y E S spell?—(7) Push a chair through a finger ring.—This forfeit is made by putting the ring on the finger and pushing the chair—any other object will do as well—with the finger. This last much resembles the next.—(8) Put yourself through a key-hole.—This was a great puzzle to us for a while, but when a piece of paper was taken with the word "yourself" written upon it, and pushed through the hole, it was all clear. There are many other of these amusing little tricks, but these given will suggest others, and help to make the social winter gatherings the enjoyable times that they should be.



No. 472. Illustrated Rebus.—One of the many very wise sayings given to us in the Proverbs.

A Pile of Winter Wood.

The season for getting together a good, large pile of wood has come, and many of the boys and girls take a lively interest in this important work. It is fun for them to be where the chopping is going on, and to run away with half frightened glee when the trees begin to crack and fall. And then it is such nice sport for the boys to get on to the load—astride a large log, it may be—and ride home. When the pile is finished, the sawing machine comes to saw up the wood, and there is as good as a holiday for the young of the whole neighborhood.

We have been getting up a pile of wood too, and it is our plan to have the boys and girls point out the different kinds of wood that we have gathered together. There are sixteen kinds—rather more than in most wood-piles. The first block we will look at is from one of the finest of American forest trees; not large, bark very thick, young limbs armed with prickles, leaves something like those of the rose, flowers fragrant, and in large showy clusters, bearing pods in autumn. Do you recognize it?—The second kind is an evergreen, the leaves, like little needles, remaining all winter. It bears cones 2 to 4 inches long. The tree grows in wet ground, and is not very good for wood; we cut it because a road is to be put through where it stood.—Upon a bank near the low ground No. 3 was cut; it is also an evergreen, and a very common one, often growing to a large size. The wood is coarse and light, and full of splinters when split. The leaves are lighter on the under side than above. The branches are used by boys for making bows and whistles.—No. 4 is a wide-spreading and lofty tree, and when given space in an open field, is noted for its grace and beauty. The leaves are notched along the edges, and a little larger on one side than on the other. Boston had a famous tree of this kind until it was blown down and destroyed a few years ago. New Haven is often called the "City of——." There is another kind, the inner bark of which many people like to chew.—Under favorable conditions, No. 5 grows to 30 feet in hight, but it is at most a small tree. The bark is loose, and in thin square patches. In early spring this tree is covered with a profusion of white flowers like a full blown apple-tree. The berries are red in autumn, bitter, and not fit to eat. The *Bark* may help you to distinguish it.—No. 6 is one of the leading trees in many American forests, and makes an excellent fire wood. The bark is smooth, and trees that stand by the road-side are usually carved and disfigured with names and dates. The nuts are larger than, but in shape resembling a kind of grain sown late in the season, from the flowers of which bees make much dark honey. The *blue* kind is a different and much smaller water-loving tree, with tough limbs. This kind has held a high place in the education and correction of unruly youngsters.—No. 7 is too valuable as lumber to be often found in the wood-pile, except in those regions where it is almost the only tree, and where hundreds of men are employed during the winter in getting out the logs. This wood is fine for whittling, white, light, and soft, and is excellent for kindling.—A handsome, rough-barked, slender, yellow-limbed tree, with long drooping leaves, partially fond of the water, is our No. 8. Do you find it? There are a number of kinds of it, one of which is a weeping sort, and often planted in grave-yards. The wood is light and yellow, and not of great value for fuel. The long flexible branches are largely used in basket making, and highly prized by boys for whistles.—No. 9 is a large, broad-leaved tree, with very light, white wood, and tough stringy under bark. The flowers are not showy, but the bees find them and gather the best quality of honey, in the estimation of many. The wood is of little value for fuel, but is used for light lumber, as the thin stuff used in small boxes.—A small tree (we are sorry the artist has forgotten this) that grows in poor sandy soil is No. 10. The botanists say of it, "The cup, very thick....half enclosing the ovoid nut." The more familiar kinds of this group of trees are excellent for fuel and timber, one kind especially important in ship-building.—No. 11 is a medium-sized tree, with dark-brown bark and reddish, slender, spicy, aromatic twigs. There is a kind with white outer bark, which

THE WOOD-PILE.—PICK OUT AND NAME THE 16 KINDS OF WOOD.

may be taken off in great thin sheets. The Indians were accustomed to make many of their canoes from a tree by this name.—There is one of the United States often called after No. 12, because of the tree's unusual thriftiness and abundance along the rivers in that State. The leaves are large and consist of five parts as in a "five-leafed clover," only very much larger. The flowers are large, and in great fragrant bunches, afterwards bearing large, smooth, brown nuts, unfit to eat, within a green shell or covering. This tree is more ornamental in the yard than valuable for timber.—No. 13 is an evergreen, growing in swamps, to the hight of 30 to 70 feet. The wood is exceedingly durable, and well adapted for exposed situations, as fence posts and the like. It is sometimes called by another and a double name.—The best fire-wood in our pile is No. 14, being hard and heavy. The trees do not get very large around, but often quite tall. The wood is very strong, and is highly prized for many uses. The nuts are thick-shelled, and much sought after by the boys, who, when climbing these trees, are likely to tear their clothing on the rough, hard bark.—A pile of winter wood without No. 15 would not be complete, as it is hard, easily split, and very excellent fuel. One kind is important, from the sweetness which it contains, the extracting and condensing of which is the delight of the youth of all regions where this tree grows.—The last, No. 16, is not the best wood for burning, but the tree bears the finest nuts of the temperate zone. No tree like this takes the children to the woods so quickly after the frosts come. No tree gives so much trouble to the mother who has to patch and mend. No tree gives sharper spines or prickers for the fingers of the early and impatient visitor. No boy will suffer more and *sometimes* seem to get so little as with our last tree.—Thus, we have tumbled around and over our wood-pile (a single block, the artist says), and if any one is not able to tell all the kinds, it will not be because we have not tried to help by both pen and pencil.

ON THE POND IN WINTER.

Every season of the year brings its peculiar pleasures and pastimes, and none has a longer and better list than winter. It is not necessary for me to say to the boys and girls that ice furnishes fun "for the million," just because it is so smooth and slippery—if it were sticky as mud or dough, then half the joys of the out-of-door sport of winter would all be spoiled. How splendid it is that when the water gets to a certain coldness it passes into that beautiful, solid, crystalline form which we know as ice! and then the feet are shod with narrow strips of steel, and away go the happy skaters for a race. That boy or girl who has not lived where ponds and rivers, lakes and mill-ponds, "freeze over," or living there, has not joined in the fun of a skating party, does not know how near the expert, easy, graceful skater comes to the joy of a fast-flying bird. The artist has given you a scene upon the ice that none can fail to appreciate. The small boy with his old "swan-neck" skates and awkward strides; the graceful older brother and sister, or friend, with better skates and greater skill, the patient adjustment of the straps, etc., are all shown to life; but there is one thing which, though just as natural as all these, has been left out, and well it may—the fall! How it hurts to have the feet move on much faster than the head, until—and it don't take long—the stars shine with a peculiar lustre, and one looks to see if he is out of sight. Again, the skating may be attempted before the ice is ready, and the bold and fearless youth often finds himself a wetter if not a wiser boy. If the pond is shallow, and the bottom soft and muddy, why! it is not so very dangerous; but then it is, to say the least, provoking. But what would skating be without a fall, a bump—a regular *thump*—and a little danger now and then!

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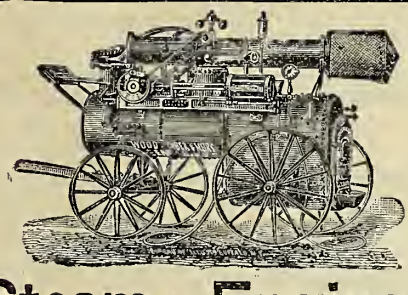

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Do not fail to send for a complete explanatory circular and instructor of the

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Grain and Fertilizer Drill.

The only one made having the celebrated never-failing **CONE GEAR** and **DOUBLE FORCE FEED,** and is sold everywhere with the greatest satisfaction to both purchasers and dealers. Also the reliable

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The best adjustable Feed Drill made.

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Has all the good points and appliances of any other, besides many very desirable and important features exclusively our own.

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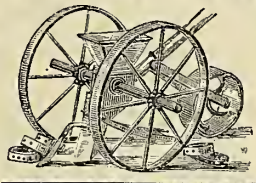

This is the most complete and positive **Seed Drill** ever invented. It is radically different from and superior to all others. It is the **only** machine which measures and drops the seed with a positive motion, and exactly the same amount at each foot or yard. It has been tested by 6 years' use in Massachusetts, and was awarded the **highest prize** at the "Centennial." ☞ The **"MONITOR"** has been thoroughly tested during the seasons of 1878 and 1879, and heartily endorsed as a

FIRST-CLASS MACHINE

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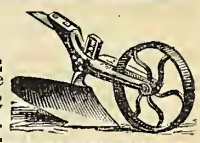

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These are the very best articles of the kind manufactured. Prices reasonable, and all goods guaranteed.

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THE
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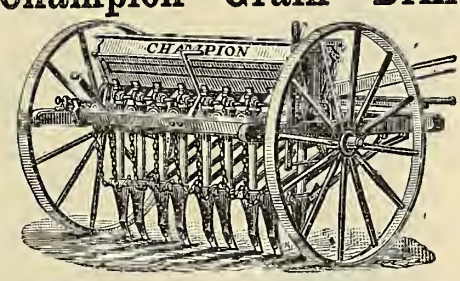

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With or without Fertilizer Attachment or Gum Spring Hoes. It has a **perfect force feed** Grain Distributor that will sow accurately all kinds of grain without the least injury to the seed.

UNEQUALLED AS A CORN PLANTER.

Fertilizer attachment **can be relied upon** to sow all kinds of commercial manures whether dry or damp in any desired quantity. **Draft Light, Construction Simple, but durable.** Liberal discount to cash customers. Send for descriptive circular.

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Does as much work as 5 men can do by hand, and BETTER work than can be done by any other means whatever. Agents wanted in every county in the United States. Price $6. Send stamp for circular.

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Over 25,000 Now in Use.

Every Machine is guaranteed to give satisfaction, or no pay. Price of Mills, $12; Shellers, $5. Every farmer should have them. Send for illustrated circulars and terms to agents. Address
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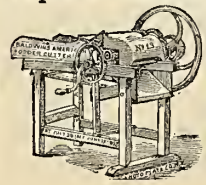
Improved Baldwin's American Fodder Cutter



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ESTABLISHED 1851.

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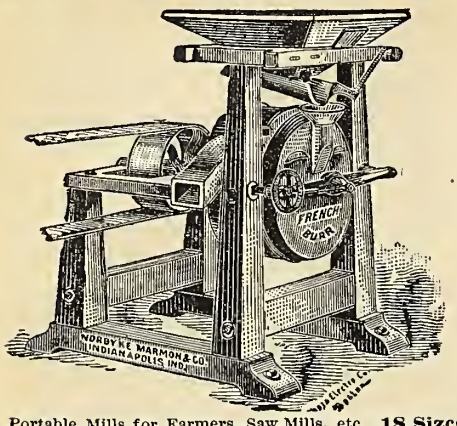

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Big Giant Corn Mill,

Every Man His Own Miller.

The only Mill that will grind Corn with Shuck on without extra expense. The only Mill grinding Corn and Cob successfully, that will grind Shelled Corn fine enough for family use.

Grinds twice as fast as any other Mill of same size and price.

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Two, Four & Six Hole, Belt or Geared.

Manufactured by **THE JOLIET MANUFACTURING CO.** JOLIET, ILL.

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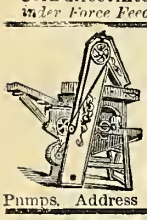
This is the only Sheller that *Self Feeder* carries the Corn direct into *Feed Hopper*, which has a *positive Cylinder Force Feed*, that entirely prevents clogging.

CHALLENGE FEED MILLS.



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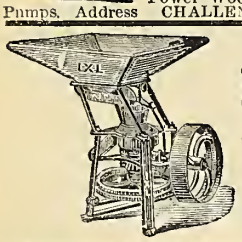

All Iron but the Hopper.

Cheap, Effective, and Durable.

CAN BE RUN BY ANY POWER.

Capacity from 6 to 30 bushels per hour, according to size. Send for Catalogue and prices.

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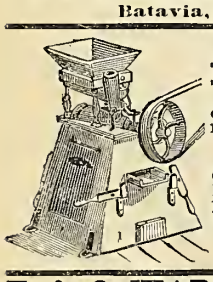

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STEEL

Is simple, durable, and cheap. Grinds all kinds of grain rapidly. Is adapted to all kinds of horse powers. *Send for Descriptive Circular.*

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BARNES' PATENT FOOT POWER MACHINERY.

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COMPLETE OUTFITS for Mechanics and Amateurs.

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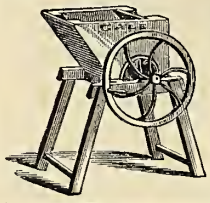

made. Manufactured by the Belcher & Taylor Agricultural Tool Co. Also

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combining the latest best improvements, and

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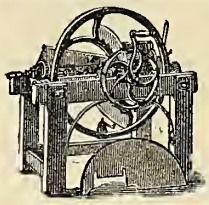

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The Best Feed Cutter in the World.

The only one that runs light enough for Wind-Power.

Send for circular, references, &c. Name this paper when you write.

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Will mend and make your chains of all sizes without tools. Inquire at your hardware stores, or send to

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HEEBNER'S HORSE POWERS

WITH

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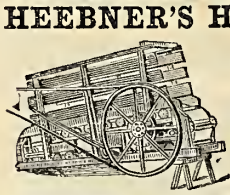

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Labor Saving **RIDING SAW MACHINE** is fully demonstrated by the number in use and the present demand for them. It saws Logs of any size. **One man** can saw **more** logs or cord wood in one day and **easier** than two men can the old way. It will saw a two foot log in three minutes. **Every Farmer needs one.** Township agents wanted. Send for Illustrated Circular and Terms.

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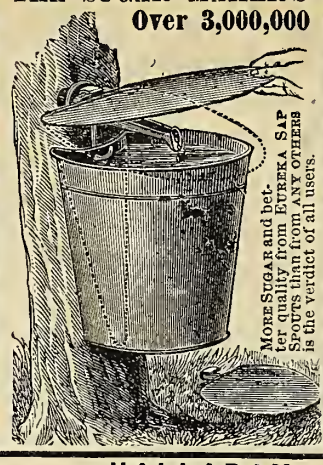
Over 3,000,000 in Use.



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Call for them at your Hardware Stores. *Responsible Agents Wanted.* Samples, circulars, and terms sent, post-paid, on receipt of 20 cents. Address

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STANDARD WIND MILL.

VICTORIOUS AT

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25 Years in Use.

GUARANTEED SUPERIOR

To any other Windmill Made.

17 Sizes—1 Man to 45 Horse Power.

Adopted by the leading R. R. Co.'s and by the U. S. Govt. at Forts and Garrisons.

$3,500,000 worth now in Use.

Send for Catalogue **"A."**

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THE CHAMPION

Is the Best Wind-Power in the Market.

Is perfectly self-regulating, runs no faster in a gale than in a light wind, is very powerful, and never blows away while the tower stands.

We also manufacture the **Iron Screw Wind Mill,** and the Celebrated **Star Wood Pumps,** with porcelain lined iron cylinders, wood eave-trough, tubing, etc., etc.

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BUY THE BEST.

Myers' Improved Wind Mill

The Mill has a solid wheel built expressly to stand any storm, and when in motion moves as regular as a steam engine. **Perfectly balanced** on the derrick in or out of gear. Pronounced by the best mechanics to be **superior to all other Mills.** No farmer, stock-raiser, or dairyman should be without one for pumping water for stock, grinding feed of all kinds, churning, and many other purposes. Send for a full descriptive circular.

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We manufacture the old reliable **Stover**—the well tried, strong, durable, self-regulating, solid wheel **Wind Mill,** which took *the* Centennial Diploma, as well as a Medal. We refer to the **Official** Centennial Report. Also O. E. Winger's Improved $20.00 Feed Grinder, which is operated by Pumping Wind Mills—a novel and perfect Mill for grinding all kinds of grain for stock and house use, and Winger's Gravity Churns. Agents wanted everywhere. Send for catalogue to

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Montgomery's Improved Rockaway Fan.

222 First Premiums. 15 Silver Medals.

Gold Medal at Md. Institute in 1878,

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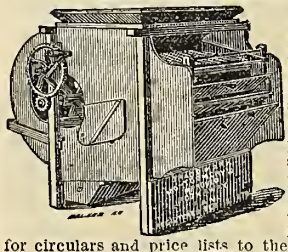

No good Farmer can afford to be without one of these Fans! This universally known Fan has been victorious in every contest, and has the approval of thousands of Farmers all over this country. It is the best and cheapest Fan made for the farmer and planter. It is the only Fan that will effectually take out of wheat the great Virginia trouble "Partridge Pea." Prices reduced. Send for circulars and price lists to the manufacturers,

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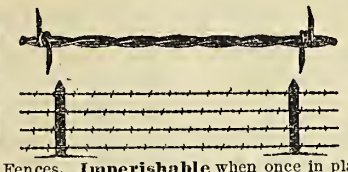
STEEL BARB FENCE,

Solves the FENCE Problem by meeting all the requisites of

THE PERFECT FARM FENCE.

Every Land Owner should not fail to examine the merits of this fence. It is cheaper than all others. Easiest handled, and in fact just what the people of the treeless States have needed for years.



To All Inquirers. It is an impassable barrier, yet harmless. Prohibits t espassing. It can be put up by any one, and is compactly put up for transportation. In fact, it is the only fence dog and wolf proof.

Cheaper than Wooden Fences. **Imperishable** when once in place. **Indestructible** by the Elements. Wastes no soil by SHADE. Has **no Weedy Fence Borders. Shelters no Enemies of the Crops.** A **Protection** at all seasons. It is **easy of Construction.** It needs **no repairs.** Accumulates **no snow-drifts.**

A STEEL THORN HEDGE.

Impassable Barrier. Prohibits all Trespassing. It can not be destroyed by fire, wind, or flood.

100,000 miles of Barb Fence have been erected in 1876, 1877, 1878. Agriculturists, Herdsmen, Sheep Husbandmen, Ranchmen, Vineyard Proprietors, Orchardists, Nurserymen, Railroad Companies, Road Proprietors, and all owners and occupants of soil and areas to be protected.

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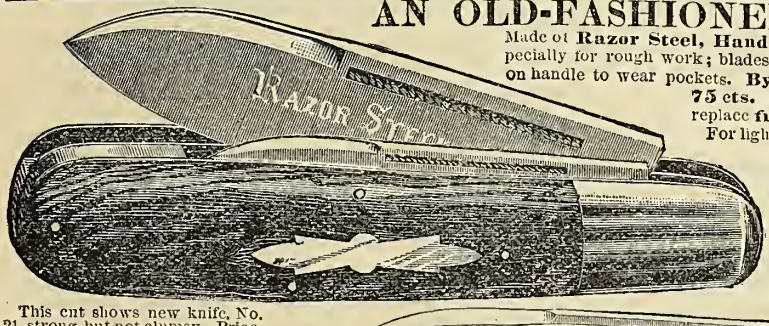
AN OLD-FASHIONED KNIFE.

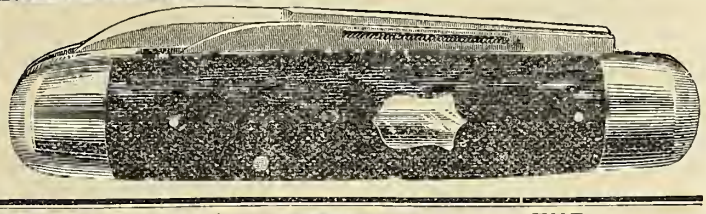


Made of **Razor Steel, Hand Forged,** and made especially for rough work; blades very thick. No corners on handle to wear pockets. **By mail, postage paid, 75 cts.** Soft or flawy blades we replace **free.**

For lighter work we have knives of equally good steel, 50 and 60 cts. One-blade, like picture, 50 cts.; lighter 1-blade, 25 and 35 cts.

Pruners: Medium, 75 cts; **Our Best,** 8 inches when open, oil temper and tested, $1.

BUDDING, 65 cents; **Farriers',** $1.00.



This cut shows new knife, No. 21, strong, but not clumsy. Price, 75c. Same, 3-blade, $1.00. **Pen Knives:** Gent's 3-blade, $1.00. Fine pearl handle, 2-blade, $1.00. Congress knife (our finest), $1.50. Ladies' 1-blade, 25c.; 2-blade, 50c. List **free.** Discount to dealers. Address

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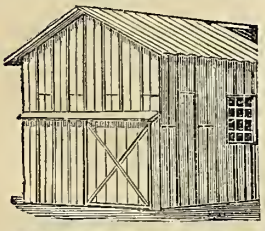

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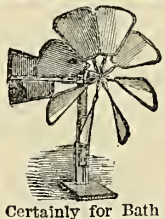

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GIBSON & BENNETT, Woodbury, N. J.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from Page 8.

In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations are seldom repeated, as those who desire information on a particular subject can cheaply obtain one or more of the back numbers containing what is wanted.

Back numbers of the "American Agriculturist," containing articles referred to in the "Basket" or elsewhere, can always be supplied and sent post-paid for 15 cts. each, or $1.50 per volume.

Bound Copies of volume 38, and of every previous volume back to Vol. XVI. (1857), neatly bound, with gilt backs, Index, etc., are supplied at $2 each (or $2.30 if to be sent by mail). See Publishers' Notes, 2d cover page.

Clubs can at any time be increased by remitting for each addition, the price paid by the original members; or a small club may be made a larger one at reduced rates, thus: One having sent 6 subscribers and $7, may afterwards send 4 names more and $3, making 10 subscribers for $10.00; and so for the various other club rates.

Terms to New South Wales, New Zealand, Australia, Africa, etc.—To several inquirers. Under the latest revision of the Postal Union Regulations the price of the *American Agriculturist*, (either English or German edition), including postage *prepaid* through, will be covered by 7 shillings sterling per annum. This applies to the above countries, and to all others embraced in the General Postal Union. The simplest mode of remittance is by Postal Money Orders, payable in London, to the order of Orange Judd Company. These can be readily cashed in N. Y. City at a slight discount, which the publishers will cheerfully pay. For Club rates, (postage included), see our second cover page, and reckon 22 cents to the shilling sterling.

Hoose in Calves.—"H. C. B.," W. T. The so-called "diptheria" which killed your calves is doubtless a parasitical disease known as *husk* or *hoose*, otherwise *vermicious bronchitis*. It is common among calves and lambs which feed in marshy or wet pastures, and often in other pastures where older animals have run. The disease is caused by the presence of white thread-worms in the air passages, which are often so numerous as to cause suffocation. The remedy is to give Turpentine in one ounce doses in milk, every morning, for a week or ten days: or to give Sulphur in 2 dram doses, every day for 3 or 4 weeks. The whole system must be impregnated with the medicine, which passes off by the lungs and the mucous secretions, but kills the worms with which it comes in contact.

How Many Hogs to an Acre of Clover?—"E. P.," Taunton, Mass. That depends on the kind of hogs and the sort of clover. An acre of good clover, that would cut two tons of hay, should afford pasturage for 10 hogs of 200 pounds each, if they would not root it up. It would keep more, if the clover were cut and fed to the hogs in pens, and a little meal slop given for drink.

Bone Meal is a valuable but slowly acting manure. Some farmers who have used it with little or no increase of the crop, the first year, have been disappointed. Bone, when used as a fertilizer, is not washed out: a great advantage in porous or leachy soils. The finer the meal is ground the quicker it is used up by vegetation—coarse meal may make its presence felt upon the crops for several years after its application.

Lice from Birds.—"J. C. E.," Clinton, Pa. Lice from poultry and birds will greatly annoy horses and cattle, and cases have been known in which horses have been so badly infested with them as to die under the infliction. But it is only the mature insects which give trouble. They will not breed upon any quadruped, and if the source of the annoyance is removed, the effects will be only temporary. Poultry, sparrows, swallows, owls, and other birds are usually infested with the minute lice which do the mischief. The remedy is to clear these out from stables and barns, and if necessary brush the infested animals thoroughly with a mixture of lard and kerosene oils. Smear a brush with the oils and shake it out thoroughly, and then give the coat a vigorous brushing.

Poultry Exhibitions for January, Etc.

VERMONT.		
Champlain Valley Poultry Ass'n	Burlington	Dec. 30-Jan. 1
Wide Awake Poultry Club	St. Johnsbury	Dec. 30-Jan. 1
Vermont State Poultry Ass'n	Rutland	Jan. 6- 9
MASSACHUSETTS.		
Central Mass. Poultry Ass'n	Worcester	Jan. 20-23
Middlesex Poultry Ass'n	Lowell	Dec. 29-Jan. 2
Southern Mass. Poultry Ass'n	Fall River	Jan. 13-17
RHODE ISLAND.		
Rhode Island Poultry Ass'n	Providence	Feb. 4-11
CONNECTICUT.		
Meriden Poultry Club	Meriden	Jan. 6- 8
NEW YORK.		
Cortlan' Co. Ass'n	Cortland	Ja . 20-23
Empire State Poultry Ass'n	Syracuse	Jan. 29-Feb. 5
Eastern N. Y. Fanciers' Ass'n	Albany	Jan. 20-27
PENNSYLVANIA.		
Central Poultry Ass'n	Pottsfield	Jan. 6-10
Huntington Poultry Ass'n	Huntington	Jan. 12-15
Lancaster Poultry Ass'n	Lancaster	Jan. 3- 4
Lehigh Valley Ass'n	Allentown	Dec. 30-Jan. 3
Luzern Pet Stock Ass'n	Wilkesbarre	Dec. 31-Jan. 2
INDIANA.		
Northern Indiana Poultry Ass'n	Fort Wayne	Jan. 27-30
State Poultry Ass'n	Indianapolis	Ja . 8-15
ILLINOIS.		
Western Poultry Club	Bloomington	Jan. 16-23
IOWA.		
Council Bluffs District Ass'n	Council Bluffs	Jan. 20-23
CANADA.		
Montreal Pet Stock Ass'n	Montre l	Feb. 4- 6
St. Johns Po ltry Ass'n	St. Johns, N.B.	Jan. 20-22

A Most Interesting and Important Article is given on page 13. If one half the confident expectations of the U. S. Fish Commission is realized, untold millions will be speedily added to the food production of our country, at trifling cost. Not only lakes and streams, but the pools of bog-meadows and sloughs will be the best food-producing portions of the country. The gentlemen conducting the U. S. Fish Commission, while enthusiastic, are not the men likely to indulge in groundless theories. They have accomplished great things in other directions, and we are much inclined to put confidence in their promises for the Carp. Read the article.

A House for 30 Ducks.—"C. H. W.," Yarmouth, Me. Ducks are very dirty birds in a house and need to have considerable room. A flock of thirty will require a house 12x12 feet, which should be so made that it can be easily cleaned out. Nest places should be provided on the ground, bidden by a frame around three sides.

The Breed for Market Pigs.—"Rose Farm," N. J. It is a matter of dispute, and always will be, which are the best breeds of pigs for special uses. The Berkshire is black but comely, and perhaps the most profitable pig of all the breeds for pork at any age. The Essex is also black, and some think that the best, but it has the objection of having too much fat. Some will have only white pigs and the Suffolk is generally considered the best of the small white breeds; the small Yorkshire is a more modern variety, and perhaps owes some of its good qualities to a Suffolk cross. If so, it would be fair to call the Suffolk a better kind than the Yorkshire. But there are some who think differently, and no one can say confidently that this or that is the best except from his own point of view and as a matter of opinion. The small white breeds have become so much crossed and mixed, that at the English exhibitions they are no longer classed distinctively but collectively as "small white breeds."

Poultry Disease.—"Minnie C." sends no name or address. We do not usually answer such letters, but in this case of a little girl, we make an exception to our rule. The disease is doubtless the prevalent "cholera," so called; it is a disease of the liver and intestines, a typhoid or intestinal fever, which ends in gangrene. The fowls sit about, turn yellow about the head, void green or yellow matter and do not eat. There is no cure; the disease is very infectious and the best way is to kill every sick fowl as soon as it is discovered. Remove the well birds to a fresh place, that is clean, dry, and airy, and feed them on boiled wheat with a small tablespoonful of fine, dry lime stirred in the mess for each dozen fowls.

Dr. Lawes' Wheat Crop for 1879.—The following interesting figures are condensed from a communication by Dr. J. B. Lawes of Rothamsted, England, to the "North British Agriculturist." Within his memory England has never before had such a bad wheat crop as that of 1879, certainly not since 1816. Dr. Lawes is one of the most eminent of agricultural experimenters, his results being of peculiar value from their accuracy in all the details and the length of time over which the experiments have extended. He has grown the same kind of crop on the same piece of ground, and same condition as to fertilizing, and some with no manure for 36 years. The tables, which it is not necessary to reproduce, show that the continuously unmanured plots the present year gave only 4¾ bushels per acre of wheat, while the average for the past 10 years on the same plots, was 11 bushels; and 14⅞ bushels per acre, for the 17 years just preceding the last ten years. A *gradual* decrease is to be expected, but not the falling off which occurred in 1879. The plot receiving 14 tons to the acre of farm-yard manure annually, gave only 16 bushels for the last year, against 34 per acre as the average for the preceding 27 years. Of the three artificially manured plots one gave 16¼ bushels, or about half the average; the second, more highly manured, gave 20½ bushels, likewise a half average. The last and most highly fertilized plot, gave 22 bushels per acre, also about a half average. In 1863, the average of the three artificially manured plots was 55 bushels. In 1879, the very same plots and fertilizers, had an average of 19½ bushels, and each bushel weighed 9 pounds less than in 1863.

Dr. Lawes concludes by stating, "We have here a striking illustration of how great is the influence on the results of the farmer's efforts, of circumstances entirely beyond his control, after he has employed all the resources at his command to obtain a good crop."

Sowing Forest-tree Seeds.—"W. J. A. B.," Kans. We hope to give an article on this subject, before the season is at hand for sowing. Just now, the point of greatest importance is, to preserve the seeds, so that they may germinate when sown. If many seeds, the chestnut for example, are left exposed to the air, they become so dry that they can not be restored—killed in fact. All the seeds you name are best preserved in damp sand, and any others about which you are in doubt, should be treated in the same manner. While the sand should be "damp," it must not be *wet*. Sand as it is freshly dug from the bank, is usually in the proper condition. Enough should be used to keep the seeds well separated, so that they may not be in masses together, but equally distributed. An equal bulk is usually enough, but no harm can come from using more. The mixed sand and seeds must be kept in a cold place. In a warm one, the seeds would soon germinate and be lost. Most seeds will not be injured by freezing, and some benefited. They should be looked at occasionally, to see that the sand does not get entirely dry; if quite dry, enough water should be added to make it as moist as at first. Towards spring, some kinds may begin to germinate, and must be sown at once; indeed, early sowing is best for all. Keep the seeds during winter where rats and mice can not get at them.

Salt for Black Knot.—"D. D. S.," Malden, Ulster Co., N. Y., asks if salt will cure black knot on plum trees. From the nature of the knot, which is described in full on page 22, we do not see how salt can be made to reach the real trouble, which is at work long before it appears as the knot. The only way is, to cut off the affected branches, and burn them. Cut several inches below the knot, as the threads run down some distance.

A Cow with Sore Eyes.—"L. K.," Glen City, Pa. When a cow is troubled with inflamed eyes, a cough and inflammation of the udder, with stringy milk, it indicates fever with disturbance of the lungs and circulation. The treatment should consist of a dose of 12 ounces Epsom Salts, repeated the third day, and after that 4 drams of Saltpetre, given daily; with warm bran slops, and good nursing, until the fever completely disappears.

Electricity in Bee Keeping.—Herr Freiwirth, a bee keeper, and correspondent of the *Deutsche Presse*, has recently perfected an apparatus for quieting bees by electricity, by which they become as lifeless creatures, and remain so for from ten minutes to a few hours, the duration of the effect depending upon the strength of the current. He has used the machine for hiving the bees, and for working among them while they are in the hive, and finds that electricity does not injure the bees at all, but renders them, in an instant, as easy to handle as so much lifeless matter. We hope that some of our bee keepers, who have devised so many improvements in the apiary, will test the matter; if all that we have quoted is true, it will be of great value. Many would keep bees, if it were not for the dread of stings; this use of electricity would practically remove this obstacle.

The Apple Leaf Fungus was figured and described last month, p. 468, and we have since then received several interesting letters concerning it. Mr. "P. P. H.," Union, Monroe Co., W. Va., writes: "I have observed this Fungus for several years, and, of course, read the article with interest. We had a young Crab-apple tree transplanted to our yard, but the early frosts deprived us of its beautiful bloom; and the sickly, blotched foliage, made it a pitiable object among roses and other shrubs. We often discussed its removal, but the desire to see it covered with its unrivaled blossoms, led us to exercise patience. Two small Red Cedars were brought and placed near the Crab-apple, and these were soon covered with the 'Cedar Apple.'....It would seem from this that the spores were communicated from the Crab-apple tree. You say, by destroying the Cedar fungus, that upon the apple may be eradicated. Would it not be better to begin with the 'cluster cup,' the first stage of its existence?"—It would be better, if practicable. It is a much easier matter to collect the Cedar apples than the leaves of the apple trees; besides, if the leaves are picked off in early spring, it would injure the tree.—"T. C. W.," Manhattan, Kansas, sends specimens of the fungus on the leaves and twigs of a wild Crab-apple tree, and says: "The tree grows thriftily, and looks prettily in the spring, but after a while this fungus comes on it so badly, that many of the leaves curl up and drop off, and *whenever it attacks the twigs, all above the fungus dies*....There are Red Cedars all around, and plenty of Cedar apples."—We should, as this Crab-apple tree is near an orchard, cut it down, and the Cedar trees, if near by, should be looked after.

Through a Brick.—In September last, page 349, an engraving was given of a potato perforated by the root-stock of Quack or Couch-Grass (*Triticum repens*). It is stated in the article that another and more slender grass, the Mexican Drop-Seed (*Muhlenbergia Mexicana*), has similar, though more slender, root-stocks, which in their onward growth through the soil, penetrate any soft obstacle they may meet. Since the perforated potato was published, a friend gave us a specimen in which this root-stock had made its way through a brick! "Seeing through a brick" is a wonderful performance sometimes shown to "greenhorns," but we long ago showed the Boys and Girls how it was done. There is nothing wonderful about the passage of the root-stock through this hard substance, when we find that there was a hole through the brick. The brick was an imperfect one; probably a *small* twig or straw was in the clay, which, burning out, left a hole through which the grass found its way.

A Nurseryman's Society.—"L. B. S." There is such a Society; we think it is not confined to nurserymen, but includes those engaged in the sale of seeds and plants of all kinds, and has for its objects, as we understand them, the better acquaintance of those engaged in kindred pursuits, and such mutual understanding as shall help one another and protect one another from the various frauds practised upon such dealers. The officers for 1879-80 are: President, T. S. Hubbard, Fredonia, N. Y.; Vice-Pres't, J. T. Lovett, Little Silver, N. J.; Sec., D. Wilmot Scott, Galena, Ill.; Treas., A. K. Whitney, Franklin Grove, Ill.; Exec. Com., with the Pres't and Sec., S. W. Hoover, Dayton, O.; Franklin Davis, Baltmore, Md.; Geo. B. Thomas, Westchester, Pa. We do not know the conditions of membership, but presume that any nurseryman, seedsman, or florist, in good standing, will be welcomed to the Society. The next meeting will be held at Chicago, Ill., June 16-18, 1880.

Do Snakes Swallow their Young?—Several years ago, at the request of an eminent naturalist, we asked for experience upon the above question. And abundant evidence was given to show that some snakes do take their young into their bodies. After this, it was asked if this was done by venomous snakes. On this point, "W. F. M.," Arispie, Kans., writes: "that while he and his boy during the past season killed 19 Rattle Snakes, without finding any young within, but one of his neighbors killed a 'Rattler' containing 13, and another killed one containing 4 young snakes, which, so soon as liberated, by coiling up, rattling, and striking out at persons, showed their venomous 'Rattle Snake' nature."

Seed Corn.—If any one's last crop of corn was not of as good quality as desirable, and a neighbor or distant friend has some better sort, make it a business to get some of it for seed, *now*, and have it ready when the day of planting comes. In selecting, note the time of ripening, size and number of ears on stalk, size of stalk, quality of the grain, and all other important points.

To Prevent Powder-Post.—The honey-combed, powder-covered, worm-eaten, and therefore worthless state, which hickory timber will many times assume if not properly cared for, is caused by the larvæ of the *Lyctus striatus*, an insect that deposits its eggs in the soft outer wood of the dead tree, mostly during the months of May and June. If the trees are cut at a season when the soft wood becomes dry and hard before the time for the insect to make its appearance, there is no danger from this pest. Hickory cut in the winter season will generally be free from attacks, but to make sure, it is best to remove the bark, and even split the timber that it may become thoroughly seasoned. Keep it in a dry place.

Illinois Agricultural Institute.—The Agricultural Department of the Industrial University, Champaign, Ill., will hold its annual course of public Lectures and Discussions during the last week of January. Greater facilities for gaining information pertaining to the farm will be given than in the past, and a much larger attendance is anticipated. For farmers who have a longer time at their disposal a course has been especially arranged to extend from January 7th to March 23d, during which time daily lectures and other instructions will be given on practical farm matters. — [It is a matter of taste to be sure — but we think it not good taste for an institution called an "University" to send out its circulars in *red* ink!]

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our record kept daily during the year, show at a glance the transactions *for the month ending Dec. 12th*, 1879, and for the corresponding period last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats
25 d's *this* m'th	526,000	6,127,000	4,036,000	589,000	602,000	916,000
26 d's *last* m'th	484,000	10,170,000	4,116,000	557,000	1,193,000	1,212,000
SALES.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
25 d's *this* m'th	465,000	23,817,000*	5,902,000*	354,000	611,000	1,805,000
26 d's *last* m'th	473,000	26,839,000*	6,347,000*	395,000	673,000	1,796,000

* Including sales for forward delivery.

2. *Comparison with same period at this time last year.*

RECEIPTS.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
25 days 1879..	526,000	6,127,000	4,036,000	589,000	602,000	916,000
26 days 1878..	475,000	4,236,000	2,434,000	387,000	743,000	831,000
SALES.	Flour.	Wheat.	Corn	Rye.	Barley.	Oats.
25 days 1879..	465,000	23,817,000	5,902,000	354,000	611,000	1,805,000
26 days 1878..	504,000	5,936,000	4,094,000	411,000	609,000	1,302,600

3. *Exports from New York, Jan. 1, to Dec. 9.*

	Flour. bbls.	Wheat. bush.	Corn. bush.	Rye. bush.	Barley. bush.	Oats. bush.	Peas. bush.
'79.	3,441,000	62,212,007	34,105,000	4,013,000	167,000	523,000	381,000
'78.	2,433,166	52,166,952	25,844,569	3,970,465	1,518,667	3,645,001	428,937
'77.	1,386,875	19,833,574	25,276,390	1,992,620	1,936,956	246,355	454,056
'76.	1,823,050	23,606,295	16,339,741	1,281,929	88,097	619,118	689,246
'75.	1,789,299	25,054,035	12,495,349	152,925	1,505	133,754	415,019
'74.	2,055,423	33,700,159	18,329,781	641,661	3,320	110,331	425,533

4. *Stock of grain in store at New York.*

	Wheat. bush.	Corn. bush.	Rye. bush.	Barley. bush.	Oats. bush.	Malt. bush
Dec. 8, '79..	9,249,862	1,249,704	422,873	454,157	432,106	175,205
Dec. 10, '78..	3,910,457	3,520,555	602,206	965,577	1,233,994	133,069

5. *Tide-water Receipts at Albany, from opening of navigation to Nov. 30:*

	Flour. bbls.	Wheat. bush.	Corn. bush.	Rye. bush.	Barley. bush.	Oats. bush.	Malt. bush.
'79..	8,000	29,206,100	18,392,300	1,985,900	2,679,900	1,055,900	336,700
'78..	13,400	26,486,006	25,167,800	2,103,600	3,192,300	5,062,500	486,800
'77..	29,100	12,743,500	23,631,100	1,282,700	5,530,900	4,228,700	607,500
'76..	37,100	11,801,100	11,386,600	762,700	3,858,000	3,167,900	735,600
'75..	113,600	21,335,200	8,581,800	250,900	3,833,600	3,108,300	659,800

CURRENT WHOLESALE PRICES.

	Nov. 13.	Dec. 12.
FLOUR—Super to Extra State	$4 50 @ 5 75	$5 40 @ 6 50
" Super to Extra South'n.	4 50 @ 7 50	5 40 @ 6 00
" Extra Genesee	5 50 @ 6 75	6 25 @ 7 50
" Superfine Western	4 50 @ 5 00	5 40 @ 6 00
" Extra Western	5 15 @ 8 50	6 00 @ 9 25
" " Minnesota	5 15 @ 8 50	6 00 @ 9 00
BUCKWHEAT FLOUR, ₩ 100 lbs	2 35 @ 2 75	2 30 @ 2 65
BUCKWHEAT, per bush	60 @ 62	— @ 65
RYE FLOUR, Superfine	4 85 @ 5 65	4 85 @ 5 50
CORN-MEAL.	2 65 @ 3 40	2 75 @ 3 35
CORN-FLOUR, per bbl	4 00 @ 4 50	4 20 @ 4 50
OAT MEAL, ₩ bbl	4 50 @ 6 50	5 25 @ 7 25
WHEAT—All kinds of White.	1 21 @ 1 41	1 42½@ 1 62½
" Red and Amber	1 22 @ 1 40	1 40 @ 1 62½
" Spring	1 07 @ 1 39	1 15 @ 1 50
CORN—Yellow	60 @ 67	65 @ 70
" White	60 @ 68	65 @ 70
" Mixed	57 @ 59	64 @ 66½
OATS	40 @ 49	48 @ 55½
RYE	85 @ 90	90 @ 97
BARLEY	70 @ 98	75 @ 1 10
HAY—Bale, ₩ 100 lbs	35 @ 85	45 @ 95
STRAW, ₩ 100 lbs	30 @ 70	40 @ 85
COTTON—Middlings, ₩ lb	12⅜@ 12¼	13¼@ 13⅜
HOPS—Crop of 1879, ₩ lb	35 @ 47	30 @ 43
" " 1878, ₩ lb	7 @ 18	7 @ 20
" olds, ₩ lb	4 @ 10	4 @ 10
FEATHERS—Live Geese, ₩ lb	35 @ 48	37½@ 52½
SEED—Clover, West. & St. ₩ lb	8½@ 10	8½@ 10¾
" Timothy, ₩ bushel	2 60 @ 2 85	Nominal.
" Flax, ₩ bushel	1 50 @ 1 60	Nominal.
TOBACCO, Kentucky, &c., ₩ lb.	3 @ 14	3 @ 14
" Seed Leaf, ₩ lb	6 @ 35	6 @ 35
WOOL—Domestic Fleece, ₩ lb	25 @ 50	27½@ 55
" Domestic, pulled, ₩ lb	24 @ 48	26 @ 52½
" California	16 @ 36	13 @ 40
TALLOW, ₩ lb	7 @ 7⅜	6⅝@ 7
OIL-CAKE—₩ ton	30 50 @ —	33 50 @ —
PORK—Mess, ₩ barrel	10 90 @11 25	12 50 @12 85
" Extra Prime, ₩ barrel	8 25 @ 9 25	— @ —
BEEF—Extra mess	11 00 @11 50	11 00 @11 50
LARD, in trcs. & bbls, ₩ 100 lb	7 05 @ 7 20	7 60 @ 8 35
BUTTER—State, ₩ lb	18 @ 40	16 @ 37
" Western, poor to f'cy, lb.	16 @ 40	15 @ 37
CHEESE	4 @ 13½	4 @ 13¼
EGGS—Fresh, ₩ dozen	20 @ 24	16 @ 26
POULTRY—Fowls, ₩ lb	5 @ 11	7 @ 12
" Chickens, ₩ lb	5 @ 12	7 @ 12
" Roosters, ₩ lb	4 @ 5	3½@ 5
Turkeys—₩ lb	8 @ 10	6 @ 12
Geese, ₩ pair	1 00 @ 1 50	1 00 @ 1 50
Ducks, ₩ pair	40 @ 50	40 @ 70
" ₩ lb	10 @ 13	8 @ 14
RABBITS, ₩ pair	25 @ 35	30 @ 35
HARES, ₩ pair	30 @ 40	35 @ 40
DUCKS, Wild, ₩ pair	20 @ 2 00	20 @ 2 50
QUAIL, ₩ dozen	2 25 @ 2 50	1 50 @ 2 25
WOODCOCK, ₩ pair	40 @ 50	— @ —
PARTRIDGE, ₩ pair	50 @ 1 00	20 @ 50
SNIPE, per doz	40 @ 2 00	— @ —
PIGEONS, ₩ doz	1 25 @ 2 25	2 00 @ 2 50
GROUSE, ₩ pair	60 @ 1 00	60 @ 1 00
VENISON, ₩ lb.	7 @ 16	9 @ 12
APPLES, ₩ barrel	1 50 @ 3 25	1 50 @ 3 00
PEARS, ₩ bbl	1 50 @ 4 75	2 00 @ 4 00
QUINCES, @ bbl	3 00 @ 6 50	— @ —
GRAPES, ₩ lb	2 @ 5	1½@ 5
POTATOES, ₩ bbl	87 @ 1 75	87 @ 2 00
" Sweet, ₩ bbl	1 25 @ 2 25	2 00 @ 3 25
TURNIPS ₩ bbl	75 @ 1 00	75 @ 1 00
TOMATOES, ₩ box	— @ —	— @ —
BEANS—₩ bushel	1 80 @ 2 10	1 80 @ 2 15
PEAS—Canada, in bond, ₩ bu	— @ 80	— @ 85
" new, green, ₩ bag	1 75 @ 2 00	1 75 @ 2 25
BROOM-CORN	2½@ 6½	4 @ 9
CARROTS, ₩ bbl	75 @ 1 00	75 @ 1 12½
BEETS, ₩ 100 bunches	75 @ 1 00	75 @ 1 00
CABBAGES—₩ 100	3 00 @ 4 50	3 50 @ 5 00
CAULIFLOWER, ₩ doz	2 00 @ 6 00	— @ —
ONIONS—₩ bbl	2 50 @ 3 50	2 50 @ 4 00
CRANBERRIES, per bbl	4 50 @ 7 25	4 50 @ 7 00
SQUASH, ₩ bbl	50 @ 1 50	75 @ 1 50
CELERY, per dozen bunches.	1 00 @ 1 25	75 @ 1 00
PUMPKINS, ₩ 100	3 00 @ 6 00	4 50 @ 8 00

Business in Government Securities, and Railway and Miscellaneous Bonds, Mortgages, and Share property has been again on the increase through recent weeks, and the speculative temper has developed more confidently, leading to renewed firmness, and buoyancy in prices; favored by the prevalent ease in the Money Market....In Produce and Merchandise, oparations have been also on a comparatively liberal scale,--notably so in Breadstuffs, Provisions, and Cotton, but at very variable quotations, the changes having been frequent and, in several instances, quite radical, as resulting, in great part from the speculative influences, which have been in substantial control of the Produce Markets....All kinds of Breadstuffs have been again advanced materially, through speculative action, which has carried prices relatively much above the current figures in the Foreign Markets, (though these have shown a steadily hardening tendency), thus seriously impeding the outward movement of Flour and Grain, and leading to a rapid accumulation of supplies at the seaboard, as well as at the principal points of the interior. Notwithstanding the unsatisfactory position of the export interest, the speculative demand has been gaining in volume, urgency, and confidence, especially within the past week or two, and the loss in values, of which mention was made in our last, has not only been recovered, but prices have been pushed decidedly ahead, on the upward movement, on excited markets, particularly at the extreme close, subject, of course, to sudden and, in instances, sharp reactions, partly due to sales to realize profits. Wednesday, December 10th, was marked by a rise from the preceding day in Wheat of 2@3 cts.; Corn, 1@2 cts.; Rye, 3 cts.; Oats, 1¼@2¼ cts., per bushel; Flour, 10@25 cts. per bbl., on very free dealings, in Wheat and Corn, and an active trade also in Rye, Oats, and Flour. The transactions in Wheat were mainly in Winter grades, chiefly in the grades of No. 2 Red, and No. 1 White, on speculative account,—the operations in No. 2 Red, for January delivery, alone, having exceeded, on the specified day, 900,000 bushels, opening at $1.61, rising to $1.62, and receding to $1.60½ per bushel. Corn also met with unusual attention on that day, the reported sales having amounted to about three-fourths of a million bushels, of which amount about one-half was for prompt delivery, in good part for export. Of Wheat, shippers have been recently making the most important purchases of low grade, or ungraded stock, as being least affected by the speculative manipulation of values, which does not exceed much beyond No. 1 White, No. 2 Red, and the various classes of No. 2 Spring. On Thursday, Dec. 11, transactions in Wheat were again very extensive, having been, as reported, up to nearly two million bushels, (1,984,000 bushels), of which about 290,000 bushels were for prompt delivery. Most of the day's trading was again in the option line, and chiefly in Winter grades, of which, in No. 2 Red, the dealings reached 1,300,000 bushels, including for January delivery, 800,000 bushels. Prices fluctuated widely, the extremes for the day having been fully 3c. a bushel apart, but at the close the quotations stood, in most instances, ½@1c. a bushel higher than on the preceding day. A freer export inquiry was reported, chiefly for No. 1 White for the Continent. Corn receded ½c. a bushel, and Oats fell off 1@2c. a bushel, on a much lighter volume of business. Rye has become quite scarce for early delivery, giving holders the advantage in all current negotiations, the market winding up buoyantly. Barley opened very brisk at advancing prices, but has recently been in limited request, and somewhat irregular. Oats have been rising steadily, on a reduced offering and active inquiry....In the Provision line, Hog products have been remarkably active and buoyant, closing more or less unsettled. Beef and Beef Hams, firm, and in fair request. Butter and Cheese less sought after, the former yielding in price. Eggs also weaker....Seeds have been without important alteration, and have been, as a rule, quiet, strictly prime to fancy Clover Seed having been the notable exception as in fairly active demand ...Hops have declined considerably, as influenced by the falling off in the export call, and the accumulation of stock here....Hay and Straw have advanced, and have been in good request, with comparatively moderate supplies available ...Wool has been more sought after. and has been quoted higher, closing generally strong in price, on much lighter offerings....Cotton has been decidedly buoyant, on a brisk movement, mainly speculative....Groceries have been attracting less attention, and prices have been quoted weaker....Hides and Leather, again dearer, and in light stock....Naval Stores and Petroleum less active, and unsettled....Metals, Hardware, and Boots and Shoes, less freely dealt in. Iron and Iron products weaker in price ....Dry Goods, on the advance in nearly all instances, and remarkably active for the season....Ocean freights have shown much less animation, and rates have declined materially....The closing of inland navigation has cut off one important source of supplies of produce for the winter, the great trunk railways being now the chief reliance of our merchants for the current movement of bulk freight to the seaboard. At the extreme close, the freight market was further seriously depressed, the rates on Grain, hence by steam to Liverpool, (Dec. 11), having fallen to 4c. per bushel, and by sail hence to Cork, for orders, to 5s. per quarter, and for Provisions, by steam to Liverpool, to 22s. 6d.@30s. per ton.

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	Beeves.	Cows.	Calves.	Sheep.	Swine.
Nov. 17	8,358	255	1,684	21,389	46,647
Nov. 24	11,229	211	1,462	41,638	37,613
Dec. 1	12,499	467	2,093	32,259	53,728
Dec. 8	8,980	325	1,336	28,340	44,373
Total for 4 *Weeks*	41,066	1,258	6,575	123,626	182,361
do. *for prev.* 5 *Weeks*	63,683	1,371	16,258	197,413	221,243

	Beeves.	Cows.	Calves.	Sheep.	Swine.
Average per Week	10,266	314	1,643	30,906	45,590
do. do. *last Month*	12,736	272	3,251	39,443	44,248
do. do. *prev's Month*	11,972	226	4,209	33,027	32,892

Prices for beeves the past four weeks were as follows:

WEEK ENDING	Range.	Larger Sales.	Aver.
Nov. 17	6 @10 c.	7½@ 9½c.	8½c.
Nov. 24	6 @10¾c.	8¼@ 9¾c.	9 c,
Dec. 1	6¼@10½c.	8 @ 9½c.	8¾c.
Dec. 8	6 @10¾c.	8¼@ 9¾c.	8¾c.

Beeves.—The month's business opened briskly, with a decided advance in prices, and became stronger as the weeks elapsed. An advance of ½c. ₩ lb, and the expectation of higher prices unfortunately tempted shippers to overshoot the mark, and, by crowding the market, tumbled prices down again, causing heavy losses. $50 a car load was the figure of the loss to many, and a dull feeling prevailed up to the close; when an effort to put up the market failed, and prices remained stationary at 2¼@3¼c. ₩ lb, live weight, for coarse oxen and dry cows; 7c.@8¾c. ₩ lb for poor to fair steers, to dress 55 to 56 lbs; 9c.@10¼c. ₩ lb for good to choice to dress 56 to 57 lbs, and 10½c.@10¾c. for selected steers on 57 lbs. estimate. Exports have been brisk; the last week 250 live cattle, 8,627 quarters of beef; 2,150 dressed sheep, and 175 dressed hogs were shipped....**Cows.**—The demand has been unusually strong for cows, and a gradual advance in prices has taken place, which the unusually heavy receipts in one week of nearly 500 head did not check. Good cows are now worth $60 per head, and extra have sold at $70. The range may be quoted at $45 to $65 per head for fair to extra ...**Calves.**—A steady business, with an even demand, has kept the market in good condition. Firmness, at full prices, may be said to mark the trade, for no quotable advance has been made during the month, yet the seller has been favored more than the buyer. Grassers have been steady at 2½@3c. ₩ lb alive; choice calves have sold as high as 3½c. ₩ lb. Fed calves have brought 3½@4½c. ₩ lb, and veals 4½@7½c. for common to choice....**Sheep and Lambs.**—The market for sheep has been brisk, and prices have gradually strengthened, closing at 3¾@5¼c. ₩ lb for poor to choice. Some heavy Kentucky sheep, average 157 lbs., sold for 6c., the highest price for more than 6 months. Lambs have been less active, and 5@6½c. has been paid for common to extra....**Swine.**—A brisk market and somewhat higher prices are to be noted, at the fore part of the month, with a fall of ½c. ₩ lb towards the close, when a firmer feeling was exhibited, and prices advanced ½c. ₩ lb to 4¾ and 5c. ₩ lb.

Horse Market.—Few horses are selling at present. The best indication of the condition of the horse market is the fact that dealers have shipped largely to Europe, 50 animals having been sent to Antwerp by one steamer. These were fine coach horses, and taking into account the risk of shipping valuable animals at this stormy season, it shows clearly that the home market has been without any life. One thing to be considered is, that the summer's business has cleared off most of the good stock, and there are few left in breeders' hands, so that while sales are few and far between, prices remain stationary. A few work horses are always called for to fill vacancies, and just now this is all that is doing.

Prices of Feed.

Bran, per ton	$16.00@$18.00
Middlings, per ton	19.00@ 20.00
Ground Feed, per ton	21.00@ 23.00
Linseed-oil-cake, per ton	35.00@ 40.00
Cotton-seed-meal, per ton	26.00@ —
Chandler's Scraps, per lb	2@ 3

Prices of Fertilizers.

Nitrate of Potash (95 per cent.), per lb	9 @9½c.
Sulphate of Potash (potash 44 per cent) per lb	3½@4 c.
do. do. (potash 27½ per cent) per lb	1½@1¾c.
German Potash Salts (potash 12 to 15 p. c. p. ton.	$15.00@18.00
Muriate of Potash (potash 50 per cent), per lb	2 @2¼c.
Nitrate of Soda, per lb	4¾@5 c.
Sulphate of Ammonia (25 per cent.), per lb	4c.@4½c.
Dried Blood (ammonia 13 per cent) per ton	$40.00@45.00
No. 1. Peruv. Guano 10 p. ct. ammonia, standard, ₩ ton	$56.50
do. do. Lobos, do. do. do.	47.50
do. do. guaranteed, ₩ ton, cargo K	56.00
do. do. rectified, per ton, 9.00 p. c.	65.00
do. do. do. do. 3.40 p. c.	51.00
Soluble Pacific Guano, ₩ ton	45.00
Excelsior Fertilizer Works, Fine Ground Raw Bone	55.00
Mapes' Complete Manure (clay soils) per 1,000 lbs	25.00
do. do. do. (light soils) per 1,000 lbs	25.00
do. do. do. "A" Brand, (wheat) ₩ 1,000 lbs.	20.00
do. Bone, strictly pure, meal per ton	42.00
do. do. do. medium do.	36.00
do. do. do. dissolved do.	42.00
do. Fruit and Vine Manure do.	35.00
Stockbridge Rye Manure, per ton	45.00
" Wheat do do	45.00
" Seeding Down Manure, per ton	40.00
Bowker's Wheat Phosphate, per ton	40.00
Baugh's Raw Bone Phosphate, per ton	33.00
Baugh's Manure for Tobacco and Grain, per ton	45.00
Walton, Whann & Co.'s Raw Bone Phosphate	40.00
Gypsum, Nova Scotia, ground, per ton	7.50

Home Made Bone Fertilizer.—"W. S. S." In some localities, which are distant from markets or

large towns, it may be found convenient for farmers to do the best they can to procure waste bones, and reduce them to a condition for use by means of wood ashes, as was explained in the *American Agriculturist* for Nov., 1879, (page 477). But where manufactured bone dust, or other bone fertilizers can be procured, it will certainly not pay for farmers to spend money and time in the disagreeable and slow process of thus reducing bones for use. Their money may be better used in purchasing the more effective fertilizers, and their time in doing more valuable work. The hints given to a correspondent last month, were not intended to be of general application, as W.S.S. and some others have supposed, but only to apply to special cases, where raw bones were easily procured, and the manufactured bone was not.

Balky Horses.—After long coaxing, with no little use of the whip, we have seen a balky horse started by putting a lump of earth in its mouth. The mind of the animal seems to be set on not going, and the point to be gained is to divert it from the idea entertained, and this the earth in the mouth does effectually. So soon as the horse gives its attention to the getting of the earth out of its mouth, it forgets its balkiness and can be started.

Keeping Butter with Borax. — The Italian Minister of Agriculture gives an account of experiments which have been made at the Experimental Station at Florence, to the effect that Butter, purposely not freed from buttermilk, kept perfectly sweet for upwards of three months by the addition of about eight per cent of Borax. It is stated that the Borax should be dry, in fine powder, and thoroughly mixed with the butter. A friend of ours is experimenting with both Borax and Boracic Acid, in butter,and will in due time report results.

The Gardens and Conservatories of California, is the title of a series of articles by Mr. Shinn, the Editor, the first of which appears in the "California Horticulturist" for November. This article is illustrated by a full-page photograph of the residence of A. K. P. Harmon, of Oakland, giving the house, grounds, and a large conservatory. A comparison of this fine place with our recollection of a visit to Oakland, shows that twenty-five years must have brought wonderful changes in what was then a very rude suburb of San Francisco. But this is not more wonderful than that San Francisco should publish the second Horticultural journal of the country—our old friend the "Gardener's Monthly" being the first. More wonderful still is the fact that for our third horticultural journal, we must still go to the Pacific coast, where the "Southern California Horticulturist" is doing most excellent work for its favored locality. We use first, second, and third, with reference to duration, not to indicate order of excellence, which we should not attempt where each is so good in its place.

The 10th Duchess of Airdrie, owned by Hon. Mat. Cochrane, is one of the most remarkable cows on record. She has just given birth to her ninth calf; the "8th Duchess of Hillhurst." Of the 10th Duchess and her daughters, Mr. Cochrane has sold several animals at the price named: "4th Duke of Hillhurst, $7,000; "5th Duke of H." (2 months old), $8,000; "Duchess 5th" (8 months old), $18,000; "Duchess 2d" (cow), $21,000; "Duchess 3d" (heifer), $23,600; "6th Duchess of H." (heifer), $12,000; "3d Duchess of H." (heifer), $20,500; "5th Duchess of H." (heifer), $21,500; a total of $131,600 for the eight animals. The 10th Duchess, Airdrie Duchess 4th, and the 7th Duke and 7th and 8th Duchesses of Hillhurst are still in Mr. Cochrane's possession, valued at $116,000. Grand total from the "10th Duchess of Airdrie," $247,600. Not a small sum for one cow.

The Rennet Plant.—A friend writes from Idaho that he has heard of a plant growing in New Mexico that is used in cheese making for the same purpose as rennet. Will some of our subscribers in New Mexico tell us what this plant is, or, if the botanical name is not known, send a specimen, that we may determine what it is?

Hop Culture. — "H. D. M.," St. Louis, Mo., asks a series of questions which would require a treatise to answer in full. Perhaps an answer to the first may make a reply to the others unnecessary. He asks: "Can Hops be grown to advantage on a wet, mucky soil, not springy, but a marsh, subject to overflow in winter or spring?"—Most decidedly not. The first requisite in Hop culture is a dry warm soil, if at all retentive of water the plants will soon die out. It would be a waste of labor and a useless expense to set a hop-yard on such soil like that described.

Value of Fodder Corn.—The experience of the past season has given the writer a highly favorable opinion of fodder corn. A number of cows kept for milk have been steadily fed from July until frost upon fodder corn, with the addition of four quarts of meal daily. The ration has been 90 lbs. in three meals of 30 lbs each. The first feed was given at 6 o'clock in the morning, cut up in a fodder cutter, wetted with water in which malt sprouts had been steeped for 12 hours, 2 qts. for each cow, and sprinkled with 2 quarts of meal of corn, oats, and wheat-middlings ground together; the second at noon, given whole, and the third at 6 o'clock in the evening, cut as in the morning, but without any malt-sprouts and with 2 qts. of meal, mixed with it after wetting it with water. Upon this feed the cows have kept up their usual flow of milk and in good condition, and have done as well as when fed upon green clover or grass. The corn was sown with the Albany corn planter in drills 3 feet apart and 3 inches apart in the drill. Five feet of row produces 30 lbs. of fodder, or 2 lbs. to the square foot, or 43 tons to the acre, the corn being about 8 feet high and having a good many half-grown ears here and there. One acre of such corn is thus able to support 40 cows 10 days, or 12 cows for 40 days; but this is only when fully grown, as it was when these weights and measures were made. Half of this estimate would be fair, considering that the feeding of the fodder usually begins when a part of the field is only half-grown. It may be gathered from these facts that there can be no more valuable fodder crop grown for late summer and early fall feeding than fodder corn. This experience is corroborated by that of many other dairymen and farmers, but it is worth noting that there is a difference in fodder corn which may well account for the various opinions regarding it. There is that which, sown broadcast and being too much shaded from light, is without color or substance, and makes very poor feed; and that, on the other hand, which having been grown in rows and exposed to the light is more solid and the juices are more mature and perfect. The latter kind is that which satisfies those who use it, and the former is that of which so many complaints have been made, and doubtless with justice, and which have given fodder corn a bad reputation with those farmers who had rather give heed to what they hear than try experiments for themselves.

An active Farmers' Club is that of Oxford, O., of which the Rev. James McGregor is President, and Miss Virginia Dare, Secretary. The meetings are held monthly, at the residences of the members, and the programmes for all the meetings of the year are neatly printed beforehand. The programme is not a mere statement of the topic, but gives a digest of sub-topics, and persons are appointed to speak upon these. The programme for this month will give an idea of this complete and excellent arrangement: "January 2, 1879. 10 A.M. The Club will meet at the residence of Mrs. E. S. B. *Topic.*—Wastes of the Farm and Household. *Sub-Topics.*—1. Waste Lands in Fence Rows; Sprouts; Washes; Knolls, etc. Opened by Mr....2. Wastes in Keeping and Management of Horses, Brood Mares, and Colts....3. Wastes in Keeping and Management of Cattle, Cows, and Calves....4. Wastes in Breeding, Feeding, and Management of Swine and Sheep....5. Wastes in Machinery, Bad Buying, and Poor Care....6. Wastes in Harvesting and Storing Crops, Corn, Grain, and Roots ....7. Wastes in the Kitchen. Mrs. ——, (this and the following are assigned to ladies)....8. Wastes in Amount and Kinds of Food....9. Wastes in Heating and Cleaning the House....10. Wastes from Irregularity and Want of System." This club means business.

Seedling Peaches. — "P. S. T.," Spring Creek, Va. Has been told that seeds from budded peaches would not come up. — Which is nonsense. Has been told by others that the seeds would produce such fruit as the tree would have borne had it not been budded. This is another error. No one can foretell what kind of fruit a peach seed will produce, but it is more apt to have fruit like the tree which bore the seed than will other cultivated fruits. Some varieties of the peach reproduce themselves from the seed with great regularity; with others it varies, being either poorer or better than the parent tree. To be sure of the variety, we bud.

Buying Tools.—The winter is the time to buy tools. Every farmer should, at this season of the year, determine what implements he will need for the next year, and make arrangements for procuring them. If a mowing machine is to be bought, let him take time by the forelock, and look into the merits of each kind of these machines, and buy intelligently; do not wait until the grass is ready to cut, and rush and buy the one nearest at hand. By sending to the various manufacturers, circulars with full directions, and illustrations, can be obtained, together with prices, etc. If a plow is needed, do all the work of selecting it, before the busy season is at hand, that it may not be "on the way," just when the best week for plowing is passing. In the peace of winter, prepare for the war of summer.

Sewing Machines.—The largest sewing machines now in use weigh 800 lbs., and are employed in carriage manufactories for doing the stitching of the leather, as upon the dasher and other parts. These large machines are as perfect in their action as the small, family ones, and accomplish in a few minutes what would require hours to do by hand, and do it in a superior manner.

The Vandal of Laurel Hill.—At Laurel Hill Cemetery, in, or near, Philadelphia, there were two Cedars of Lebanon, each some 50 feet high, and well known to lovers of trees as among the finest specimens of this Cedar in the country. We learn from a late "Gardener's Monthly" that one of these trees were cut down! And why? Because the tree was in the way; it interfered with the reading of the inscription on some paltry gravestone or monument! We say "paltry," with no reference to the particular handful of dust that the stone may for a few years mark, but *any* monument whatever, by the side of such a tree, is a miserably paltry affair. A few dollars and a few day's work may restore a gravestone or a monument—whatever lettering there may be, of no possible use to the dead, and only flattering the vanity of the living who put it there—could be easily replaced. But that tree! The miserable marble thing of to-day would sink into utter insignificance before *any* tree 50 feet in hight—but before a Cedar of Lebanon of 50 feet, before any Cedar of Lebanon, how miserable paltry seems any work of man. It is well to be charitable, and assume, difficult as it may be, that this person knew no better. Could he have known that the very ancestors of this tree are now regarded as among "the most renowned natural monuments of the universe;" that they furnished Solomon wood for the Temple; that this very tree descended from those mentioned all through Sacred History; had he known that to this day even the Arabs hold the ancestors of this tree as sacred, could he have cut down a Cedar of Lebanon, as if it were a used up telegraph pole? This tree would, no doubt, live for centuries after the elements had obliterated the letters chiselled into the slab or monument, centuries after the miserable piece of carbonate of lime had crumbled away, centuries after the memory of the dead whose mouument was to be preserved, and centuries after the memory of the preserver of the monument had passed away, would this Cedar of Lebanon have stood, and been an object of interest and admiration—but it was in the way of somebody's head-stone, and was cut down!

Fresh Air for Fowls.—In protecting poultry from the cold, do not shut them up so closely that they can not get a sufficient amount of pure air. Ventilate the fowl house, otherwise the fowls will sicken. Feed well, and in winter mornings give a warm mess.

Farmer's Clubs are now holding their meetings in various parts of the country, and if properly conducted, much information can be thus exchanged. The social aspect of these gatherings is not to be overlooked, in estimating the good such gatherings do. At best, the farmer's life is a secluded one, but not therefore to be considered dull and monotonous. Farmer's Clubs tend to make good neighbors, in more than one sense.

The Importation of Plants.—Whoever has been so unfortunate as to have a friend abroad send him a present of a box of living plants, will, after his experience, be ready to join the free-traders and declare against all duties, so far as plants go. We find that the dealers in plants are also desirous that the duty be abolished. To them the importation of plants is like the importation of raw material; they only get from abroad a stock from which to propagate, and the case is exactly parallel to an impost on the crude stuff in manufactures, the raw-material of which is not, and can not be, produced at home. But aside from this, the delays, which in the routine of the Custom House seems to be unavoidable, are such that if plants reach the port in fair condition, the time that must elapse before the owner can get possesion of them is the death of a large percentage. A ridiculous feature in the law is, the duty on common roots is 20 per cent., while if the plant is unfortunate enough to have a bulb at the base, Uncle Sam wants 30 per cent. If our beloved Uncle will make this nice distinction in the duty, he should have officers who can make the distinction in the plants themselves. A friend of ours recently had a box come over, which in the routine of the Custom House was appraised and the plants therein were appraised as bulbs; none of the plants therein had bulbs any more than a cabbage has, but the United States Government, through its sworn officers, said they were bulbs. It now becomes a delicate question; if these plants, which the highest authority have pronounced to be bulbs, should grow and still produce common roots, are they not guilty of constructive treason, and is not our friend an aider and abetter? Why not be done with at least this much of nonsense. If plants are to pay a duty why not have it uniform-alike for all; this would avoid the overhauling of the plants by persons who do not know a bulb from "a permanently abbreviated, tunicated, subterranean stem". Duties on plants are a serious drawback to horticulture, and help only foreign growers.

The Food Supply of England.—A correspondent, "J. B. C.," in N. S. Wales, criticises an article, published in Sept. last, in which we suggest that England must in future draw largely upon this country, for her supplies of grain and meat, and that in this trade, we are likely to be without competition. He thinks that were we to give up grain growing, and take to grazing, we might successfully compete with the English farmers in meat, but he suggests that in wheat the Australian colonies are about to enter the field as competitors. He says: "For wheat growing, we have the soil and climate, and we only require to take advantage of these two grand helps. This we seriously expect to grapple with, on a more extended scale ere long." In the matter of meat supply, he is equally confident, and says that next month they will send their first shipment, protected by some one's "process," and "hopes for great success." In our article, we had in view European competition. Our Australian friend's wheat, according to his letter, is yet to be raised, and his meat is yet to be shipped. When these reach the market, if the American farmer can not successfully compete with the Australian in meat and wheat, he (the American) will do something else. In the meanwhile, we shall remember a homely proverb—"Its the longest pole that knocks down the persimmons."

Osage Orange Hedge.—"T. D. H.," Russell Co., Va. The Osage Orange is almost universally raised from seed. Plants may be grown from cuttings, but at a vastly greater expense, and not be so good as seedlings. The seed is not usually on sale until February and March. This is to be sown and the plants grown the first year in a seed-bed, never in the place where the hedge is to stand. Seed is sown as soon as spring is fairly opened, it being first sprouted by keeping it moist in a warm place for a few days. Hedge plants one-year-old can be had at a very low rate; by purchasing these, a year will be gained in the growth of the hedge, and all trouble of seed-sowing and future care of young seedlings avoided. Your other questions are answered in Notes About Work.

A Submerged Pump.—Theoretically a pump should raise water by atmospheric pressure, ("suction" as it is often called), for about 33 feet. But owing to imperfections in our pumps, it is rarely that they can be depended upon to raise water directly, for over 25 feet. As the majority of wells are of a greater depth than this, numerous devices have been resorted to in the construction of deep-well pumps. One of the most efficient pumps of this kind is a force-pump, placed completely under water, where there is no appreciable loss from the leakage of air or water. By an ingenious contrivance of levers, the motion is imparted to the pumps placed below the surface of the water, and it gives a full and continuous stream, thrown with great force. We had one of these pumps in use for several years, during which time it kept in perfect order, and worked to our entire satisfaction; its use was only discontinued on account of being obliged to abandon the well. The fact that the American Submerged Pump, the kind to which we have reference, can not freeze is not a small point in its favor.

Further Household Notes.—(*See p.* 23, *etc.*)

Short Notes on Air.—At the freezing point, water is 770 times *heavier* than air; but heat expands air, making it lighter, so that at a temperature of 60° it is 815 times lighter than water.... At the medium temperature of 60°, with a barometric pressure of 30, every 100 cubic inches of air weigh about 31 grains, and every 13 cubic feet of it weigh a pound. The air in a room 20 feet square and 10 feet high, weighs 306 lbs. avoirdupois, and a 31-gallon barrel full weighs just about 5 ounces.... From the freezing point (32°) air expands $^1/_{493}$ of its bulk for every degree of added heat shown by the thermometer. ....At the surface of the earth, the pressure of all the air above is equal to about $14^3/_5$ lbs. upon every square inch, or 2,105 lbs. upon every square foot (over a ton!) .... Higher up there is less pressure of its own weight, and it is expanded or rarified, so that at the hight of about 2¾ miles (2.7) it is only half as dense as at the earth's surface, and it takes 26 cubic feet to weigh 1 lb. At the hight of $5^2/_5$ miles, it has only one-fourth of its density at the earth's surface, and 52 cubic feet weigh only a pound.... The pressure of the air upon water at the earth's surface is so great that it only boils when heated up to 212°. But as the pressure higher up is less, water boils at 1° less of heat for about every 550 feet we ascend. At ½ mile high, water boils at 207°; one mile high at 202°; two miles high at 193°; three miles high at 183°, and at this temperature the boiling water is hardly hot enough to cook potatoes. The air grows less and less dense until at about 45 miles high there ceases to be any air at all, it is supposed—only vacant space....An important property of air is that as it becomes warmer it absorbs water or vapor of water, and *hides it within itself*, so to speak; as it cools it gives out this water again. The air in a room 20 feet square and 10 feet high, when heated from 32° to only the temperate heat of 70°, secretes within itself $3^1/_5$ pints of water. A current of warm air when cooled by any means, as by meeting a current of cold air, gives out its secreted moisture; the little water atoms given out become visible in the form of clouds, and when there is much water thus let loose the little drops keep uniting until so heavy as to fall down as rain. So the warm air gathers up from the earth's surface myriads of watery particles, carries them heavenward hidden unseen in its vast storehouse, until it chances to be cooled, and then it drops the particles back in rain—or in snow if it is cold enough to freeze the falling drops.

Dampen the Air Now.—We can hardly too often suggest the importance of providing ample moisture in all rooms heated by stoves, furnaces, steam pipes, or hot water pipes. There are sound scientific reasons for this, as well as in the results of practical experience. As stated in "Short Notes on Air" above, every degree of heat added to the atmosphere in a room gives it a power of absorbing and *secreting* moisture. The air in a room 20 by 20 feet and 10 feet high, at 32°, holds, secretes, about 1¼ pints of water. The same air heated to 70°, secretes upwards of *two quarts* of water, and unless this is supplied, it is hungry for more water, absorbs it from every accessible source, from the furniture, from our bodies, and especially from the breathing organs—the mouth, throat, and lungs, leaving them dry and husky. Therefore, every time the air in the room is changed by the admission of fresh, cold air, and heated to 70°, two quarts of water should be evaporated into the room. The strong objections some have to warm-air heaters have arisen mainly from this cause. In using furnace heaters we always put into the hot-air chamber extra water-pans besides any that are supplied by the manufacturers, and take good care to always have them filled with water. In stove-heated rooms there should usually be an evaporating surface of water equal to one square foot for every 12 feet square of flooring, and more if the water is not on a hot place enough to keep it rapidly evaporating. Plants in a room are mainly destroyed, or have a sickly growth, because the warm air becomes too dry and sucks out the very juices of the plants. The "house plants"—"olive" or otherwise—suffer similarly. In a warm room, a large towel frequently wet and wrung so as not to drip, and hung over a rack or chair back near the stove, will make a marked difference in the comfortable feeling of the atmosphere and in its healthfulness.

Macaroni—Vermicelli—Sea-Biscuit—Pilot Bread—Plain Crackers, and Common Bread, are all about alike, in *composition* and *nutriment*. Macaroni and vermicelli differ only in the size of the tubes, both being made alike, and both are simply dried dough made of flour and water only, the same as pilot or sea-bread and plain crackers. The wheat grown in southern Europe contains more gluten and less starch than any other, and therefore makes better macaroni. This gluten is nitrogenous, like lean meat, casein or curd of milk (cheese), etc., and strengthens one's muscles more than the more starchy northern flour. Starch is carbonaceous, supplying material for producing fat and for promoting warmth in the system. Millions of people in Italy use macaroni as their chief, if not sole food the year round—the gluten answering for the lean meat consumed by other people to produce muscular strength or working power. Sea-biscuit, Pilot bread, and plain crackers, those without the "shortening" of butter or lard, are simply flour and water, worked into tough dough and baked instead of being air or sun-dried as macaroni and vermicelli are. They are usually made of northern grown wheat, containing more starch and less gluten than macaroni.

A Nice, Light, Toast Lunch.—It often happens that after a late heavy dinner, or when arriving home late in the evening, or when one is an invalid, or dyspeptic, and especially when a troublesome tooth or other mouth ailment prevents proper mastication of harder food, one wants a light, easily digestible and easily masticated dish or lunch. Well-cooked oatmeal, the grains nearly whole and not "all in a mush," is quite good, but is not always accessible, and is not liked by all. Latterly we have found the following very good, especially for a late supper or lunch, eaten only an hour or two before retiring: Toast some slices of bread pretty well, scraping off any blackened, charred portion; lay the slices on a plate, preferably a soup-plate, and pour on cold milk enough to wet it through, and leave half an inch or so in depth of milk in the plate. Good milk; a little extra cream in it is all the better, and a very trifle of salt improves it for our taste. Put over the toast thus prepared an inverted large earthern bowl, or tin basin, large enough to cover it and set down upon the plate all round. Put this in a warm, not very hot, stove oven, two, three, or more hours in advance. The milk will cook and evaporate—and its substance be condensed in the toast, while the cover will keep the toast moist. It is then very good, and eats well without butter, though a little may be applied if desired.

Speaking of Toast, comparatively few know what really good toast is. A hasty singe of one or both sides does not make toast; nor do thin slices of bread dried through. Cut slices of uniform thickness, a plump half inch or ⅝ths inch: move around over a brisk fire, to have all parts toasted alike; keep only so near the coals that the pieces will be heated through when both sides are well browned. If the slightest point is blackened or charred, scrape it off, or it will spoil the flavor of the whole. If covered with an earthen bowl, it will keep both warm and moist. A clean towel or napkin will answer if it is to go at once to the table. But, nobody can make good toast out of poor bread. Stale bread may be used for milk-toast; sour bread may be improved by toasting it through; heavy bread makes poor toast. Sweet, light bread, only a day old, or less, makes the best toast. For older bread and scraps see the next item.

"Rusk," was the old farm name for what is a palatable preparation of stale and dry bread. Save all pieces of dry bread, loaves too dry to be longer palatable, crusts, etc. Put all together, first carefully sorting any mouldy bits, and any burnt crusts. Bake or dry thoroughly in an oven until well browned—not dark-brown or coal blackened, a dark-buff-brown is best. This will keep a good while. When wanted for use, crush finely with a rolling-pin or otherwise. To be eaten in milk, of which it will absorb a large quantity. It is not only a nourishing dish, but makes a good disposition of much dry and stale bread that would otherwise be wasted.

A Good Soft Ginger Cake.—Take 1 cup of Molasses; half cup of Butter or Drippings, 1 cup boiling Water; 1 teaspoonful of Cooking Soda: and half teaspoonful of good ground Ginger. Mix soft, bake quickly

To Fry Fresh Fish, so as not to absorb the fat, or destroy the delicate flavor of the fish, is quite a desideratum. A Lady who has attended Miss Corson's practical Cooking Lectures, contributes the following to the *American Agriculturist*—derived partly from Miss C.'s advice, and partly from her own experience: Small fish are to be fried whole; large fish have the fleshy portions cut off with a very sharp knife, and divided into strips (fillets) of a convenient size for serving. When cleaned and ready for cooking, wipe dry, and roll them in powdered cracker or bread crumbs. (Cracker, ready pulverized, is now sold at most grocery stores, under the name of "cracker dust.") Dip the fish, or pieces, in well-beaten egg, and again roll them in the cracker dust or crumbs, removing any lumps so as to leave the surface smooth. Have the fat hot, and drop in the pieces, watching them carefully until they cook to a golden brown; then lift from the fat and lay upon thick paper to absorb the fat. Fillets of fish with the bones in, may be treated in the same way. By this method the fish are well flavored and much more digestible for weak stomachs. Fish are nourishing, and not only supply good food for the muscles, but also furnish good brain material.

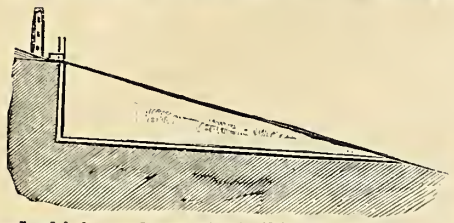
Oysters and Clams, and Meat Croquettes (balls or cakes) are best fried as above described for fish. The egg and cracker or crumbs retain their flavor, and keep out the frying fat. Placing on brown paper to remove the surplus fat is an important part of the process.

Putty in Tasmania.—There is no part of its world-wide domain in which the *American Agriculturist* meets with more appreciation than in Tasmania and Australia. In return for the many "Hints and Helps" we have given our Island friends, we are glad to occasionally receive some in return. A friend writes from Hobart Town, Tas., that having to reset some 18 squares of glass, he found the old putty, which had been in place for several years, very difficult to remove without injury to the sash. A fellow mechanic suggested the following method: "Take a heated iron, a soldering 'iron' (which is copper) is the handiest, and run it over the putty that fastens in the glass; in a few seconds it will be found that the putty, though before so hard as to require a sharp blow to take any effect upon it, will become so soft as to be removed with a common pocket knife."—Our far off friend says:—and we commend his saying to those near at hand as well as at a distance—"I often think that simple common things are not communicated as they should be, as persons mistakenly suppose that others know such matters as well as they do themselves."—The simplest devices are often the most useful.

Delaware Co. Dairymen's Association held its regular fair in Delhi, N.Y., Nov. 12—13. From the report sent us by the Secretary, together with the list of premiums awarded, it is evident that the show was a large and successful one.

The Treatment of Manure in Winter.

How can a farmer make money? Only from large crops cheaply grown or from animal products cheaply procured. How can large crops be cheaply grown? Only by means of abundant manure and good cultivation; the one being unavailing without the other. Then it comes, after all, to this: that if a farmer would make money, the size and quality of his manure pile is the exact complement of his profits from his crops; and without manure he may hope in vain to make money. His first thoughts



and chief employment at this season must be directed to making a supply of manure for next year's crops. It is better late than never, and though it is now late, thousands of farmers who have not yet begun, may yet do something towards securing a stock of manure for use in the spring. One of the most important parts of the work is, to provide a proper receptacle for the manure. An open yard from which the water drains away in all directions is the poorest place for manure making; and yet in such a yard an excellent manure pit may be made. We had recently the opportunity of showing a neighbor how to make such a pit, which was done at little expense, at the side of his yard, and we now see him every day hauling load after load of stuff into the pit to make a rich compost. The yard sloped considerably on one side towards a road. A pit 20 feet in length was dug in this bank with the bottom sloping backwards, and somewhat lower at the rear than the front. The pit was 16 feet wide and 8 feet deep, at the rear end. A fence was made around it on the yard side with a set of bars, so that the contents of a cart could be tipped into the pit. The shape of the pit is shown in the engraving. The pit was half filled with leaves from the woods, sods, and muck from a swamp, coarse manure from the yards, sods from the road sides, which were plowed and cleared for this purpose, yielding a large quantity of material. Then the manure was thrown into the pit and the yard was furrowed so that the rain water which usually gathered in the center of it, should run into the pit and keep the manure moist. The pit was made in October and in about one month was nearly full. Before it was started the farmer thought it would be foolish to make it, as he could never fill it. But one can never know what he can do until he makes an attempt. There is yet time to do a great deal in this way before spring, and if nothing but leaves are raked up in the woods to make an absorbent foundation for the pit, much may be done with them. It is necessary to have a good layer of stuff in the bottom to hold all the moisture of the manure, and if there is danger of over-heating, water may be hauled and poured on to the heap, unless there is some more ready method of applying it.

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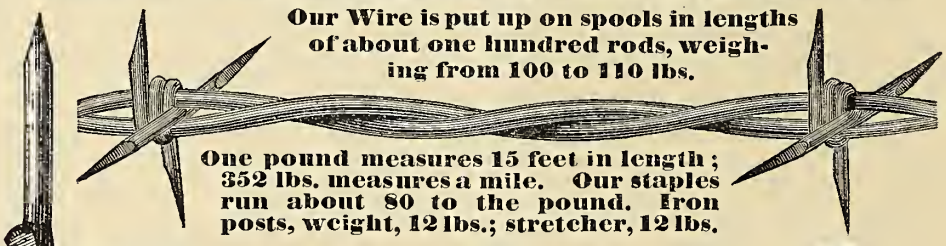

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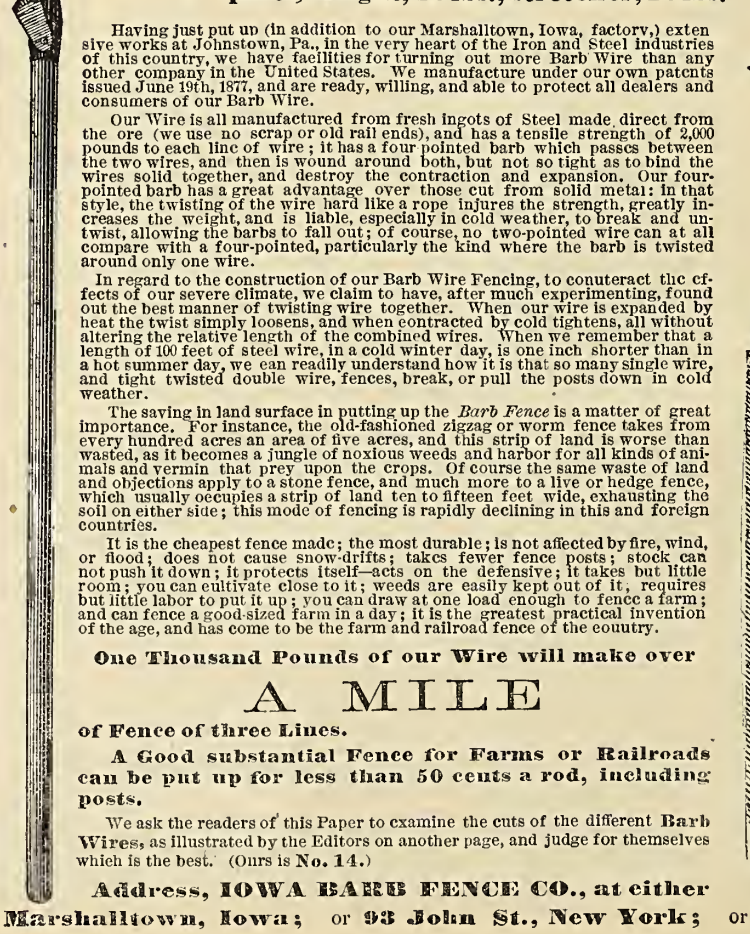

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It is the cheapest fence made; the most durable; is not affected by fire, wind, or flood; does not cause snow-drifts; takes fewer fence posts; stock can not push it down; it protects itself—acts on the defensive; it takes but little room; you can cultivate close to it; weeds are easily kept out of it, requires but little labor to put it up; you can draw at one load enough to fence a farm; and can fence a good-sized farm in a day; it is the greatest practical invention of the age, and has come to be the farm and railroad fence of the country.

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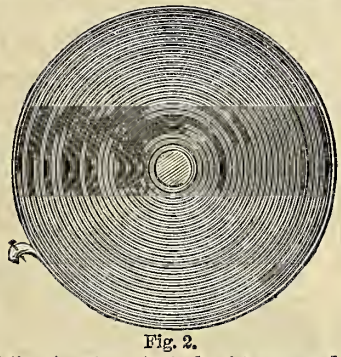

Fig. 2.

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OF THE

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From its Origin to the Present Time.

—BY—

W. M. BLACKBURN, D. D.,

Professor of Biblical and Ecclesiastical History.

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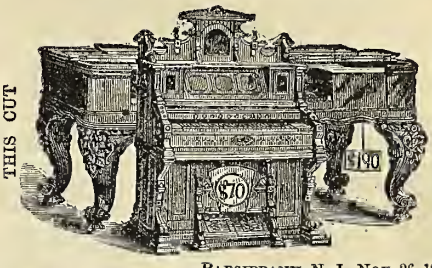

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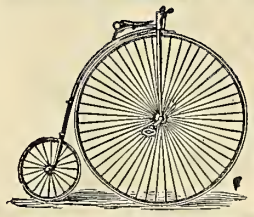

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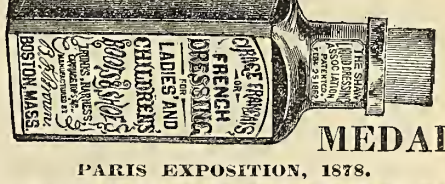

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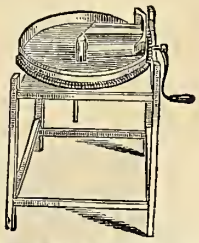

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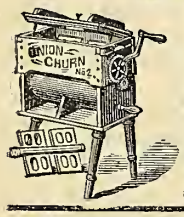

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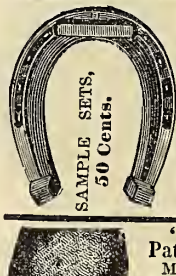

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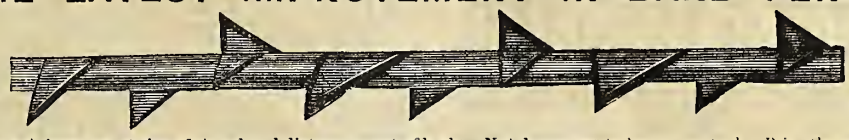
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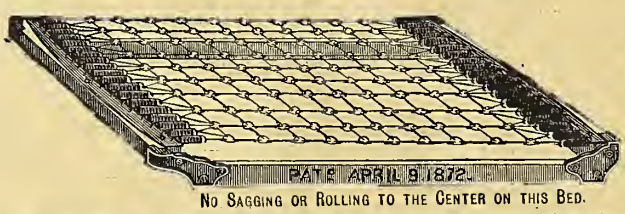

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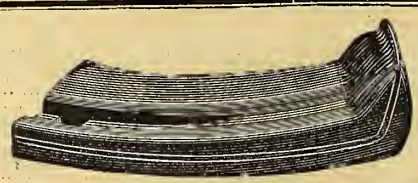

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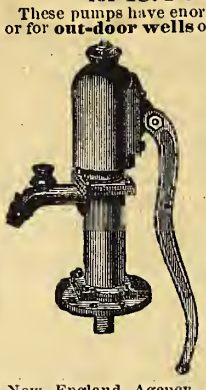

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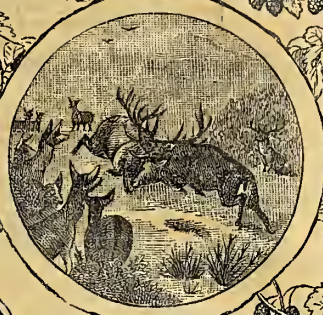

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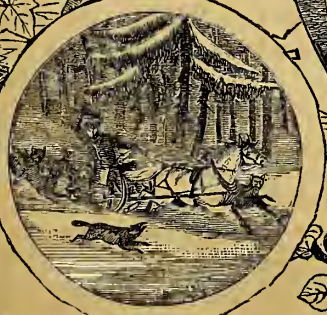

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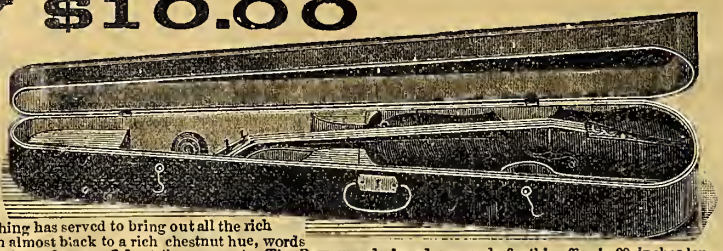

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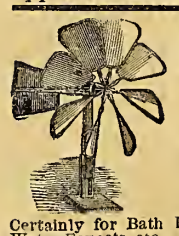

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IN THE SNOW.—*Engraved for the American Agriculturist.*

This picture is from a noted steel engraving, which we hardly need say is European, as every detail of wagon, horses, and men assert the scene to be foreign—all except the snow, that has a home-like look, hut snow storms are much alike wherever they occur. Still there is a difference in snow and snow storms. Those large light flakes that float leisurely downward, "as if the celestial geese were being plucked"—the apt simile of some one—those fluffy, pretentious flakes make a great show, hut they do not make the great snows; they indicate dampness and foretell a not very distant cessation of the fall. It is the little glistening scales, so fine that they make but little show in the air, that "mean business;" it is those that when they are sifting down so dry as to fairly rattle one another as they seek out every crevice and pack closely, that come with our serious storms—those of the kind always called "old fashioned," thongh we never hear of a "new fashioned" snow storm. To be snow-heleagued if not lost in the snow, is an experience more pleasant to look back upon, than in its immediate enjoyment. What a desolate blankness spreads in every direction. There was no evidence of human existence to cover up except a trail that marked the course; unbroken, trackless whiteness everywhere. No food for horses, very little food for men, two hnndred miles to the nearest known help! It does not require many inches of snow in a roadless country to make wagons useless as vehicles of locomotion. Snow storms there away at the present day defy the iron horse—even four of them tandem, and what could our poor, jaded, skeleton horses do? Like the horses in the picture, they gave it up, and looked at us with a dazed expression, as if to say—"Well! what next?" How heautiful these dry snows are! What an illnstration of the power of accumulation. Each tiny flake so insignificant in size, yet combined, they defy the most powerful engines. How exquisite their forms, and how varied! Not an angle since the first snow flake fell until now but measures exactly 60° or its equivalent. Then to think that this exquisite sculpturing is repeated times as far heyond onr comprehension as are the distances of the farthest stars. "But did you think of all this when snowed in?" Oh, no! we took an accounnt of our salt pork and hard-tack.

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Calendar for February, 1880.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Mo'n rises.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Mo'n rises.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Mo'n rises.
		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	S	7 14	5 14	11 26	7 10	5 18	11 22	7 6	5 22	11 20
2	M	7 13	5 15	morn	7 9	5 19	morn	7 5	5 23	morn
3	T	7 12	5 17	0 40	7 8	5 20	0 35	7 5	5 24	0 31
4	W	7 10	5 18	1 53	7 7	5 21	1 48	7 4	5 25	1 43
5	T	7 9	5 19	3 4	7 6	5 23	2 59	7 3	5 26	2 52
6	F	7 8	5 21	4 8	7 5	5 24	4 2	7 2	5 27	3 56
7	S	7 7	5 22	5 2	7 4	5 25	4 57	7 0	5 28	4 51
8	S	7 6	5 23	5 47	7 3	5 26	5 43	6 59	5 30	5 38
9	M	7 5	5 25	6 23	7 1	5 28	6 20	6 58	5 31	6 17
10	T	7 3	5 26	sets	7 0	5 29	sets	6 57	5 32	sets
11	W	7 2	5 27	7 10	6 59	5 30	7 11	6 56	5 33	7 2
12	T	7 1	5 28	8 17	6 58	5 31	8 17	6 55	5 34	8 17
13	F	6 59	5 30	9 23	6 57	5 32	9 22	6 54	5 35	9 20
14	S	6 58	5 31	10 28	6 55	5 34	10 25	6 53	5 36	10 22
15	S	6 56	5 32	11 30	6 54	5 35	11 26	6 51	5 37	11 23
16	M	6 55	5 33	morn	6 53	5 36	morn	6 50	5 39	morn
17	T	6 54	5 35	0 35	6 51	5 37	0 28	6 49	5 40	0 23
18	W	6 52	5 36	1 32	6 50	5 38	1 27	6 47	5 41	1 21
19	T	6 51	5 37	2 28	6 48	5 39	2 22	6 46	5 42	2 16
20	F	6 49	5 39	3 19	6 47	5 41	3 13	6 45	5 43	3 7
21	S	6 48	5 40	4 3	6 46	5 42	3 58	6 44	5 44	3 48
22	S	6 46	5 41	4 42	6 44	5 43	4 37	6 42	5 45	4 32
23	M	6 45	5 42	5 15	6 41	5 44	5 11	6 41	5 46	5 7
24	T	6 43	5 44	5 44	6 43	5 45	5 41	6 40	5 47	5 39
25	W	6 42	5 45	rises	6 40	5 46	rises	6 38	5 48	rises
26	T	6 40	5 46	6 51	6 38	5 47	6 51	6 37	5 49	6 52
27	F	6 39	5 47	8 2	6 37	5 48	8 1	6 36	5 50	8 0
28	S	6 38	5 48	9 15	6 36	5 49	9 12	6 35	5 51	9 10
29	S	6 37	5 49	10 28	6 35	5 50	10 25	6 31	5 52	10 22

PHASES OF THE MOON.

MOON.		BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	D.	H. M.	H. M.	H. M.	H. M.	H. M.
3d Quart.	3	10 55 mo.	10 43 mo.	10 31 mo	10 19 mo.	9 49 mo.
New M'n	10	6 33 mo.	6 21 mo.	6 9 mo	5 57 mo.	5 27 mo.
1st Quart	17	11 1 ev.	10 49 ev.	10 37 ev.	10 25 ev.	9 55 ev.
Full M'n	25	8 38 ev.	8 26 ev.	8 14 ev.	8 2 ev.	7 32 ev.

AMERICAN AGRICULTURIST.

NEW YORK, FEBRUARY, 1880.

Hints for the Work of the Month.

[*The Hints and Suggestions in these columns are never copied from previous years, but are freshly prepared for every month, from the latest experience and observations, by practical men in each department.*]

The Last Month of Winter has begun for the Northern farmer, while in the Southern States spring has already opened; whatever is to be done in the way of preparation can be no longer delayed. A late beginning makes a late season, and to regain time lost now, may be found impossible hereafter. A farmer who is behindhand is a prey to accidents and misfortunes of the season, and often finds his labor increased, and the results lessened by reason of his own carelessness. On the other hand, the forward man gets the benefit of every advantage, and many disadvantages of season are safely passed over, because he is ahead of them.

Hauling out Manure.—While the ground is hard or covered with snow, the manure heaps can be hauled to the fields with the least trouble. Those who have profited by our hints for the past few months, will have the manure in good condition for hauling out now; others will have it lying around loose and frozen, and consequently useless for some time yet.

The Finest Manure is made by turning the heap over twice. To do this, begin at each end of the pile, and throw off the manure to a distance of three feet, building up the new heaps, and placing the coarsest manure in the center. Then proceed until two heaps are made. These will soon heat, and a month or so afterwards the process may be reversed and the two heaps made into one again.

Cabbages.—Every farmer should raise cabbages, both early and late. For early kinds, the seeds should be sown in a hot-bed this month, unless plants started last fall have been kept through the winter in cold-frames. Directions for making a hot-bed will be found under the Notes for Kitchen and Market Garden. It is not a waste of manure to use it for a hot-bed, as it will be all the better for application in the garden after it has served this purpose.

Spring Oats.—In the South, if spring oats have not already been sown, they will require immediate attention. Not having time to tiller, like winter oats, 2½ to 3 bushels of seed per acre will be needed. A late sowing may yield an early harvest, by the help of a liberal fertilizing with a good artificial manure.

Early Planting is advisable for cotton, corn, and corn-fodder. For these crops, the ground should be in course of preparation this month, that advantage may be taken of good weather for planting so soon as it comes next month.

Spring Wheat.—In many localities spring wheat will succeed if it is sown early. Open weather this month, may permit plowing and sowing, although the under soil is still frozen. A cold spell may freeze the ground, or cover it with snow, but the seed is safe, the work is done; and one may rest contented, while others are grumbling.

Plowing should be done, only when the soil will crumble loosely; when the plow smears the upturned surface, the soil will be injured. While earliness and forehandedness are commendable, one should make haste with caution.

Look Ahead!—A farmer should always think in advance of his work. The whole plan must be laid out in the head, before the hands are put to it. There is time yet left for thinking over what should be done in the next two or three busy months.

Grass in the South.—A great need in the South is grass for early grazing and hay. Some of the native grasses that have been fought and struggled with for years as weeds are now found to be of great value. By smoothing off a piece of grassy land, and using some fertilizer and encouraging the growth, a home supply of hay may be secured. It is often the case that a treasure may lie neglected under our feet, and some of the Southern grasses, long neglected, can be turned to profitable use.

Grass in the North is not made as available as it might. An opinion prevails that grass lands can not be kept in permanently good condition. Yet there are in many localities plots and tracts of grass that are very old and show no signs of failure. What has been done once in this way can be done again. A permanent pasture or meadow is invaluable. Why can not we try to make and keep them? This is a subject worthy the most careful study.

Why can not we Grow Larger Crops?—There are localities where it may pay to grow small crops cheaply, where one may skin the land for a few years and leave it, just as in some places cattle are or have been killed for their hides and the carcasses left to decay. But every year these localities are growing more and more distant in the West, and in time land will be too valuable to be used in so wasteful a manner. In central and eastern localities the future prosperity of the farmers will depend upon the growth of larger crops by the expenditure of more labor on the land. To reach this end will be a work of time, but it will never be reached unless a beginning is made, and there was never a more propitious time to begin than now.

Values are Increasing.—Every relic of the long continued depression—the seven lean years—now happily gone by, is passing away. Prices are advancing, and every purchased thing costs considerably more than a year ago. The farmer who values his land and stock may justly put up the figures from 25 to 50 per cent. His income must be made to increase in proportion, and this must be done to a great extent by increasing in every possible way the productive value of his property.

Better Stock Must be Kept.—The right stock too must be kept in the right place. The choice and management of animals require an accurate knowledge which must come from outside of his own farm practice. A farmer can not test these things for himself and run the risk of losses that would be ruinous to him. All this has been done and recorded in books and agricultural papers, together with much other indispensable information, so that

A Farmer Must be a Reading Man; else he can never hope to be as successful as he should be. A DOZEN VOLUMES OF THE *American Agriculturist* WILL FORM A NEARLY COMPLETE CYCLOPÆDIA of agricultural, mechanical, and other useful knowledge for any one who lives by cultivating the soil. The work of the farm, garden, and household has been discussed, described, and explained in these volumes for more than 30 years back, in a full, fresh, and instructive manner; with them one can learn how to improve his own stock or where to procure

the best animals, as well as to improve every method of working, enabling him to meet nearly every question and demand that may naturally arise.

Keep the Good Calves.—As the cows come in, the best of the heifers may be selected for raising. There can be no better way to improve the stock of cows than to use a good bull and keep the best calves, well feeding and caring for them until matured. After these become cows a selection can again be made for breeding, and only the best retained. In a few years the value of dairy cows may be doubled by this careful practice of selection.

Feeding and Care of Stock.—On this subject there is nothing to add to the hints given last month. Prof. Atwater's articles on feeding (see page 61) should be studied until they are well understood.

Vermin.—The poultry house, if closely examined, may be found to swarm with lice. A gray mealy powder may be seen on the roosts, in crevices, and in the corners and joints of the building. Take a common squirt can filled with kerosene oil and inject the oil into every crevice about the house. Repeat this process if it is found necessary, and very soon the fowls will be free from these insect pests.

Young Chickens.—Early chickens which can be reared easily if proper care is given, may be kept in a glass covered coop protected at night by covering with straw. If severe cold is feared, heat a couple of bricks hot in the oven, wrap them in a piece of carpet, and put them in the coop. A large can or jug of hot water is also a very good warmer.

Fowls will need the best food if eggs are desired. Wheat steeped in boiling water, and given hot, and hot baked potatoes crushed with a masher, are as good food as can be given; water slightly warmed with a small quantity of Sulphate of Iron (copperas) in it, will be useful. Allspice mixed with cornmeal mush is an excellent condiment, and by no means costly. Laudanum in 10 drop doses has been found a remedy for the cholera, or poultry intestinal fever, which has destroyed so many flocks.

Geese and Ducks.—These are profitable birds in some cases, and may be kept where there is cheap grazing. Half a dozen geese will soon fill a good sized feather bed or a pair of pillows. The white ducks are perhaps equally useful in this way. Both of these will now begin to lay, but must be closely watched and kept up at nights or they will drop their eggs abroad. The eggs should be gathered and kept in a cool but not cold place until they are wanted for setting. A house suitable for geese or ducks is illustrated and described on page 60.

Notes on Orchard and Garden Work.

In the Northern Atlantic States the winter up to the beginning of the year has been an exceptionally mild one, though some localities have experienced the severity of which European gardeners and orchardists are complaining. It would be better if we could have the weather continuously so cold that all vegetation would remain dormant, but that is beyond our control, and we can do but little to avoid or repair the damage caused by unseasonable prolonged mild weather, followed by severe cold. With the majority of hardy trees and shrubs, it makes but little difference how severe the winter, provided the cold comes on when vegetation is thoroughly dormant, but when a mild spell is succeeded by a sudden cold snap, the effects are most disastrous, especially upon the more excitable trees, such as peaches and cherries. When this occurs, and the blossom buds are fairly injured, nothing can be done to remedy the damage, and the best that one can do is to grow well formed trees during the coming season, in the hope that another winter may deal more kindly with them. To many of our readers spring begins with February, and it is everywhere proverbially the "short month," hence the plans for the year should be fixed upon by this time, and the tools, seeds, plants, etc., should be ordered, that they may be on hand when wanted. Manure is an important matter to every cultivator, and none should go to waste for lack of sufficient absorbents, such as muck, leaves, cut litter, etc. Many who write us for information might find an answer to their queries did they look over the Notes in former volumes, and given more in full than is practicable in an answer by letter. Of course this refers to those who have been our readers for some years.

Orchard and Nursery.

Renovating old Orchards is an important work at this season, and was treated somewhat at length in the January Notes, to which we refer the reader.

Grafting.—If old trees produce poor or even indifferent fruit, and they are still sound and vigorous, they may be made productive and valuable by grafting good sorts upon them. This work should be done just as the buds begin to swell. If the tree is a large one, only a portion of it should be grafted the first season, beginning with the central part of the head. Great care should be taken that the grafts are of an excellent variety. It is a common notion among those who do not think about the matter, that the mere operation of grafting somehow benefits the tree. The grafted tree is in fact a new tree, all of the bearing parts of the old tree are cut away, and a new head is planted, so to speak, upon the old one. Hence the new top or head will be of the kind that is placed there, and unless good kinds are selected, grafting will be useless.

Grafting is planting a cutting in another tree instead of in the soil. When we plant a cutting in the soil, it forms roots of its own, and the tree will be all of one kind. When we graft, the cutting unites with a tree already having roots, and the top, which grows from the tree, will be of one kind, and the lower part of the tree will be of another.

Who can Graft?—There are men who go about the country doing grafting, some are very excellent and others are bunglers, but there is no need of employing any one. Any boy who can make a willow whistle can learn to graft, and every boy should be able to do it. We gave a full account of several kinds of grafting in May, 1869, and of other kinds in April, 1877, which numbers may be referred to. To answer a number of inquiries, we give here a few brief directions for *cleft grafting*, which is the easiest kind of grafting, and the one most generally practised, though it is by no means the best.

Getting Ready.—If cions are not already cut, lose no time in getting them. They may be bought at most nurseries. If you cut them yourself, be sure that the tree from which they are taken is of the right kind. Cut twigs of last season's growth only, a foot or less long; if cutting more than one kind, tie up one sort and mark it before beginning with another. Tie the cions in bundles, with their lower ends even, attach a label to them, or cut numbers on one of the cions in the parcel, to correspond with a list, lay them in a box, with damp sawdust or damp moss all around and over them, and keep in a cool place until wanted. If sawdust or moss is not at hand, set the cion in a box of slightly damp earth, covering their lower ends well.

Implements.—A fine saw will be needed; a regular pruning saw is best, but any other will answer if it has rather fine teeth with a wide set. Two good knives, one very strong and heavy, the other smaller, and made and kept very sharp. A hardwood wedge made of a stick of hickory about 6 inches long and half an inch or so thick; form at one end this wedge, beginning at two inches from the end and working it down to a point. A small mallet will be needed—a billet of wood will do.

Other Matters.—Grafting wax will be wanted; it may be bought, but it is easily made; melt together in any old iron vessel: Bees-wax, 6 oz., Rosin and Tallow 4 oz. each, over a moderate fire, stir gradually until all is melted. Take from the fire, and as soon as it begins to harden at the edges, stir until no longer liquid. Get some very old cotton stuff made thin by wear and washing; an old sheet, pillow case, or calico dress, whatever will tear in either direction with great ease; tear this into strips one or two inches wide and as long as the material will make; wind the strips upon a stick, as shown in figure 1. As one strip is wound on, put on another, putting its end *under* the end of the strip already wound, as seen in figure 1; remove all threads or ravelings in winding; when enough is wound to make the roll about 2 inches thick, tie it with a bit of thread and make another if needed; provide a wire at the other end of the stick to hang it by. Melt the grafting wax again, making it pretty hot, put in the rolls one at a time; when thoroughly penetrated by the melted wax, take out, let it drip until the wax no longer runs from it, and hang it where a few drops of wax may be caught by a paper. Treat the other rolls the same. When cool, put away from the dust. Now you are ready

To Graft.—When the buds begin to swell, put the above named things; saw, knives, wedge, mallet, a

Fig. 1.

Fig. 2.

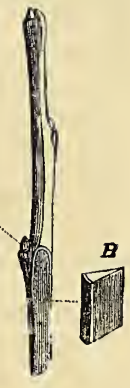


Fig. 3.

roll of waxed cloth and the cions into a basket; besides these there will be needed a small box or cup of lard, and rags to wipe the hands upon. It is well to furnish the handle of the basket with a hook to hang it by. A step-ladder is likely to be useful. Having determined upon the place for the graft, saw off the branch, selecting a smooth place free from small branches; with the large knife smooth the cut surface, place the knife across the end and strike it gently with the mallet, to make a cleft as shown in figure 2, leaving the knife in. Now take a cion, and, with the small knife cut it to a smooth wedge, beginning near a bud, as seen in figure 3, the small piece, *B*, at the side, shows the shape of the wedge, which should be slightly thicker at one side than the other. Now the cion is ready to put in its place. If the branch to be grafted is small, but one cion is put in; the place will heal better if half the branch is cut away, as shown in figure 4. By prying the cleft open with

Fig. 4.

Fig. 5.

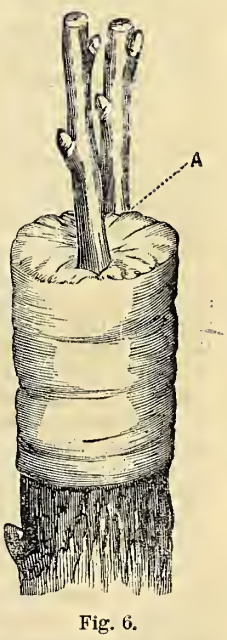


Fig. 6.

the point of the knife, the cion is put carefully into the cleft, the lower bud on it coming just at the cleft, as seen in figure 4, *A*. Here is the nice point; success depends upon having the inner bark of the stock and that of the cion touch as much as possible. Having the graft in place, all the cut portions are to be waxed, as will be described below.

Two Grafts are put in if the branch is over an inch through; all goes as before except two cions

are prepared, the wedge placed in the cleft, by which it is held open as the cions are adjusted as in fig. 5. Then to wax the graft, unroll from the waxed cloth a piece long enough, which will soon be learned, tear off a bit to go over the top, between the cions; then a piece to go around this, if the cloth is two inches wide it may be divided into two pieces. All that is wanted is enough to completely cover every wounded and cut part of both stock and cion (fig. 6). The cloth will stick wherever it is applied by pressing it with the fingers; grease the fingers with lard before working with the wax, and wipe them before cutting other cions. A single trial will enable one to wax a graft better than a whole page would tell. A cion with with two good buds besides the lower one is long enough.

Pruning.—Large branches may be cut away from fruit trees in mild weather. A saw should be used for this; and the cut smoothed and covered with paint or melted grafting wax. The objects in pruning an old orchard, are to remove unhealthy branches, and to thin the tops of the trees, opening them for the access of sunlight and air. In case trees have grown one-sided, they may often be brought into good shape again by judicious pruning.

Tree Planting.—The work of selecting the trees for planting should be done at once, that the nurserymen may have the orders in hand, and fill them promptly. Do not buy of tree peddlers, unless absolutely known to represent a reputable nursery. Most of them are frauds, and their statement of the value of new and high sounding varieties are fiction. A list of some of the best varieties of the various fruits, was given in the January number. Should the trees be frozen when they arrive, place them in a cool place to thaw slowly.

The Canker-Worm.—On mild days, the canker-worms may make their appearance, and the females, which are wingless and always crawl, must be prevented from ascending the tree and depositing their eggs. The devices for effecting this are numerous; they generally consist in placing some barrier around the trunk which the insects can not pass. Some have gutters of oil, others smooth surfaces which they can not travel. The simplest, and as effective as any, is stout paper smeared with tar or printer's ink. Blowing dust and dead insects, will bridge them over in time, and to be effective, they must be looked to every few days, and renewed as needed. *The Tent Caterpillar's Eggs* are deposited in rings on the small twigs of apple and other trees, near their ends, and can be readily seen on dull days; they should be cut off, taking the end of the twig, and burned, thus saving a much larger amount of work later in the season.

The Fruit Garden.

That which has been said of selecting trees, in the "Orchard and Nursery," holds equally good in small fruits of the "Fruit Garden." Select and order at once. Do not rely for a supply upon new and not thoroughly tested varieties. It is well to "take on trial," some of the most promising sorts, and if they succeed, there will be a basis for future increase by propagation. If indulged in judiciously this experimenting with the "new things," is one of the chief pleasures of the fruit garden.

Pruning that may have been left undone last fall, can be attended to now. Prune the Grape-vines on the first mild day, and long before the buds swell. The Currant and Gooseberry bushes need to have last year's growth shortened, and the old stems thinned out before they start to grow. Give an application of manure or ashes between the rows.

Strawberries may be planted in localities where the frost is out of the ground, as may also be done with

Blackberries and Raspberries, both of which start to grow very early, and are better if planted in the fall.

Kitchen and Market Garden.

The great range of climate our country presents is shown by the fact that while one gardener is looking forward for his work to commence in a month or two, another is tending his growing crops, and is thinking about markets and transportation. Wherever he may be, the successful gardener will be found in readiness for the busy season when it comes with its rush of work. Frequent inspection of the stored crops in the cellars is necessary as spring approaches to avoid loss from an excess of either heat or cold; the pits must be inspected to see that damage is not being done by mice.

Roots still in the ground, as parsnips and salsify, should be dug as the thawing of the soil will permit. Such roots are improved by freezing, being kept fresh and made sweeter, and more tender.

Cold Frames need daily attention, especially when the weather is warm, as there is danger of the plants starting too soon and being injured or killed by the return of severe cold. The sashes should be removed altogether on all mild days.

Vegetable Plants.—There are so many persons who had rather buy the plants needed for the vegetable garden, that the few who desire to obtain a reputation for always having a good supply can make the growing of them a source of considerable income. To such this is a suggestion in season. The

Hot-Bed is *the* means of obtaining early plants in large quantities. To give all the details of the construction and care is not practicable in a journal. Every one who grows vegetables for sale should have a standard work at hand for frequent reference, such as Henderson's "Gardening for Profit," Brill's "Farm Gardening and Seed Sowing," and Quinn's "Money in the Garden." Hot-beds should be started about six weeks before the time at which plants can be safely placed in the open ground—by the middle of this month for the latitude of New York City. In the *American Agriculturist* for February, 1877, the space devoted to Kitchen Garden Notes was almost entirely given up to the subject of hot-beds, and for fifteen cents, any one not possessing that back number can procure, by sending to the Publishers, a full treatment of the subject.

There is no Mystery about a hot-bed, yet farmers, and many others, do without this convenience, from some supposed difficulty in making and caring for it. Sashes, a few boards, and some horse manure, are the materials required. Regular hot-bed sashes are 3 by 6 feet, and may be bought ready glazed at the sash and blind factories; old window sashes will answer as a make-shift, but are far less convenient. Select a place sheltered by a building or fence from cold winds: dig a pit 2½ feet deep, as wide as the sashes are long, and as long as the number of sashes to be used require. Line this pit with rough boards nailed to posts driven down at the corners. The rear board should extend a foot above the surface, and the front one 4 inches above. The front or lower side should face the south. Nail strips from front to rear, for the sashes to slide upon.

Heating Material.—Put in the bottom of the pit a layer of 6 inches of leaves, or corn litter; then put on stable-manure, which should have been turned once or twice, to bring it to a state of uniform heat. Put on the manure evenly, and tramp it down; the manure should come to within six inches of the top of the pit; upon this is to be placed six inches of fine, light soil, and the seeds sown in that, or preferably put on two inches or so of common earth on which to set the boxes in which seeds are sown. Put on the sashes, and when the manure begins to heat, test it with a thermometer; when the heat is declining from 100°, seed may be sown in the soil, or the boxes in which they have been already sown should be placed in upon the surface of the hot-bed.

When the Plants are Up, give them air every day by lifting the sashes at the rear, not forgetting to shut down the sashes at night; give water as needed.

Boxes in Windows is an excellent way of starting plants for early setting, though it must necessarily be on a small scale. For a small garden a good supply may thus be procured. In sowing the seeds avoid putting them in too deep—a half-inch is ample for all, and a less depth is better for the small seeds. Press the soil closely around the seed.

Varieties to Sow.—The first plants to go into open ground are: Cabbage, Cauliflower, and Lettuce. For early cabbage, "Jersey Wakefield" is the leading variety, seconded by "Early York," and a second early is "Winningstadt," for general use. Of cauliflower, the "Early Erfurt" is standard; and the "Tennis Ball" and "Boston Market" are the favorite, leading market sorts of early lettuce.

Implements.—The time spent in repairing and painting tools is always well employed, at the same time one can take an inventory of stock and see what is needed for the coming season. A seed-sower should be in use, even in a garden of moderate extent, and now is the time to get that and other implements. In fact, there is much work during this month that comes under the head of

Getting Ready.—Bean poles may be wanted, and there is no better time than now to haul them from the woods to a convenient place near where they are to be used, and the brush for peas should be procured before the leaves start. The man who so plans that his season of work extends through the whole year rather than just a few months when the crops are growing, is the wise and successful one.

Flower Garden and Lawn.

There is not much work outside during the winter months. When heavy snows come—and they often do in February—the evergreens must be looked to, and the snow removed while it is fresh, and before it bends down and breaks the limbs. If the snow is deep it will be necessary to shovel it away from the lower branches of evergreens. If manure has not been spread upon the lawn it can be done now, but it should be well rotted and entirely free from weed seeds. Make all the plans for new paths, drives, flower-beds, etc., and if these are to be of much extent, draw up a plan or map of the grounds as a guide in the work. Cannas and other large roots stored in the cellar will need attention, and all decaying parts removed. The seeds for choice annuals should be selected, and for early growth may be started in window boxes, as noted for vegetable seeds under the Kitchen Garden.

Greenhouse and Window Plants.

This is the month when the greenhouse and window plants are most appreciated, and the care of previous months is giving its best returns.

Bulbs of Hyacinths, Narcissus, etc., may be brought from the cellar and forced into bloom; and a succession of flowers may be continued by still sowing seeds of Mignonette, Sweet Alyssum, Candy-tuft, and other annuals of a like nature.

Cuttings.—The boxes, sand, and soil for the propagation of the desired Verbenas, Geraniums, etc., will need to be provided at this time.

General Care.—*Water* as the plants are found to need it. Pay special attention to *ventilation*, that there may be a plenty of fresh air, and at the same time that the plants are not unduly exposed to sudden changes of out-door temperature. The leaving of the sashes and windows open for an hour, or even less, may so chill the plants as to injure them.

Insects.—Use tobacco water for the Green Fly; thorough washing kills the Red Spider. Mealy Bug is best treated by picking off with a pointed stick. Worms in the pots are best removed by turning the ball out when the worms may be found. Syringe all the plants thoroughly at frequent intervals.

The Jack-Ass Rabbit in California.—In speaking of the Jack-ass Rabbit in January last, we said that the animal was not found in California, a statement which is perfectly accurate, so far as concerns the animal we were writing about, but not correct according to California customs. As several California friends have pointed out what they consider an error, we will briefly state the facts, which are these; the name Jack-ass Rabbit was originally given to *Lepus Callotis*, an animal with the geographical distribution given in the article referred to. We have the high authority of Prof. Baird, for stating (*Pacific R. R. Reports, Vol. VIII, page* 591). "It has not yet been found in California." There is however, in California, and abundant there, a related species, *Lepus Californicus*, the California Hare, to which it seems the Californians have also given the name of "Jack-ass Rabbit," a name which properly belongs to another animal. We were abundantly aware of the existence of the California Hare, having hunted and eaten it; our mistake was in not knowing that this, as well as the Texan species, was called Jack-ass Rabbit; common names are a source of confusion among animals, as well as among plants.

A Capital Time

TO SECURE

MANY GOOD THINGS

AT

Trifling or No Cost.

☞ ☞ The Month of FEBRUARY has, for many years, been largely used by our readers in gathering and forwarding the names of their friends and neighbors, and, as a rule, quite as many Premium articles are sent out in acknowledgment of such favors, during this month, as during any other month of the year.

☞ ☞ This is comparatively a leisure month, and when people are beginning to think and plan for the work of the coming season, they are all the more ready to avail themselves of the helps, the hints and suggestions afforded by the pages of a Journal of this kind.

☞ ☞ Our contracts for the Premium Articles and Books, made during the low rates prevailing early last year, enable us to continue the liberal offers, despite the general advance in prices.

☞ ☞ It will be quite easy for any one to *now* obtain the names of two, three, four, and *more* persons as subscribers, and receive in return the corresponding Premiums or Books offered, at no expense save the cost of delivery, and many of the articles are delivered free.

☞ ☞ Every one persuaded to become a reader *will in reality be benefited.* It is next to impossible for one to go through a volume of this paper without getting some hints and suggestions that will be each worth many times its small cost for a year's subscription. Many will save ten-fold this cost by the warnings given in the Humbug articles.

☞ ☞ Again look over the descriptive list of the Premium Articles, and select one or more desirable articles, and then *secure* them this month.

☞ ☞ Premium Clubs of two or more names may consist of old or new subscribers, or *both;* also of English or German subscriptions.

☞ ☞ ☞ If the Illustrated Premium Sheet (32 pages) has been mislaid, or not received by any subscriber, a Postal Card request, sent to the Office, will bring another copy at once.

THERE OUGHT TO BE, in *every* neighborhood, at least a few good books on Animals and their Diseases, on General Farming, on Gardening, on Fruits, on Farm Implements, etc., and at least a few Standard Works on other subjects. These books *ought* to be accessible to all for reference in case of need, as well as for reading by all—a sort of circulating or reference library to be in charge of some one.

Never before was there so good an opportunity AS NOW *to get a collection of such Books at very small cost.* Any ten or more persons contributing $1.50 each, will *each* be supplied with the *American Agriculturist* for 1880, and **in addition, one Dollar's worth of Books** will be presented for each contributor to the fund. The books may be selected from the list of **847** Good Works named in our premium sheet. Where the subscriptions are mainly sent in for 1880, subscriptions for 1881 may be added, when desired, to increase the Library as far as possible. Many new subscribers can also be found. *Every* neighborhood may thus secure such a Library. It only needs some enterprising man, young or old, to take hold of the matter as a leader, and he will soon have plenty of *helping* hands, and heads, and hearts. If the Men neglect it, their "Better-halves," or Daughters, always foremost in good works, should take it up.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Will Present Grain Prices Advance or Decline? is the burden of many recent letters to the Editors of the *American Agriculturist*, the writers seeming to expect a positive Yes or No by "return mail." We know of no human being able to answer this question. Some hundreds of shrewd business men—those whose life-work is dealing in grain, and who carefully study the whole situation here and in Europe—are now investing their thousands, hundreds of thousands, and in some cases their millions, with reference to the rise or fall in prices during the next two to four months; and *these men are about equally ranged on the two sides of this question.* Part claim that the deficiency in Europe is so great that there will be a demand for all our surplus, at any price. These are buying and holding all the grain they can, at prices now so high that exports have come to a stand still. The other side claim that Europe will not take all our surplus unless at lower prices than now prevail, and they are contracting to deliver wheat at lower prices than are now current. So the question stands to-day. These great market "doctors disagree," and how shall laymen decide? The Elevators and Storehouses in New York, Chicago, etc., are full of this speculatively held grain. Looking the ground all over, it seems to us that there is about an *even chance either way.* We can not and will not advise any one to sell or not to sell. As for ourselves, our rule is to sell farm products at the current prices *when we are ready to sell* and want the money. If prices are likely to go up, there are watchful men ready to pay more to-day; if likely to go down, these same men would sell and not buy. Having sold and got the money, we feel "Well, so much is safe, anyway." If prices go down we say, "Lucky that we sold when we did." If they go up we say, "Well, it was just as likely to have been otherwise," and——no tears are shed.

Some Pins!—Less than fifty years ago, and that was in the boyhood of a good many of us and the manhood of not a few, the most rapid production of pins was 14 per minute per man. Now it is over 14 hundred. During 36 years past the Howe Company alone has, according to the *Derby Transcript*, made over fifty-six thousand million (56,246,400,000) pins, weighing 8,000 tons, and stuck them on some 221 million papers. These pins laid down end to end would reach over 33 times around the earth, or 830,909 miles! There are at present ten pin manufactories in this country, able to turn out, in working ten hours a day, over 18½ thousand million pins a year, which would give 365 pins to every man, woman and child in a population of fifty millions. That, however, is only one pin a day to each—a small allowance for many families. But with the facilities employed just before the time the *American Agriculturist* issued its first number, to produce the present regular supply of pins would require the constant work of over 7,000 men, and over 17,000 women and children to stick them on papers—the latter work is now all done quickly by automatic machinery.

The Money Value of Foods.—To all who are interested in this matter—and the number is very large—we recommend the careful perusal of Professor Atwater's comprehensive paper given elsewhere. *Feeding Stuffs* and *Fodder Rations* are subjects upon which much light is needed by those who have to deal practically with them.

Lettuce Disease.—"A. L.," Newark, N. J., brings a quantity of forced lettuce, as a sample of his large crop, with the sad complaint, that it is all rotting away. This lettuce disease is not a new trouble, but one that has done much havoc in market gardens, especially old ones, near large cities. The trouble is caused by a fungus, closely related to the Grape Mildew, and of which we may say more, so soon as the specimens in hand are thoroughly examined with the microscope. With our present lack of a remedy, the growing of lettuce in hot-beds had best be given up for a few years, in these places where it has proved so destructive, as is the case at Newark.

America and England.—Perhaps never before has America entered so largely into the very life of England. They may do without our ideas, political and social, but they can not do without our bread. The old land stretches out her hands to the new, and we send her food that to us, is better than bread cast upon the waters. England has suffered from short crops, while we have had enough and to spare. The results of the year will be seen next spring by a large immigration to our great West, and the now hard-worked and poorly paid British farmer will soon become an independent American.

The Wrong Street.—Messrs. Benson, Maule & Co. call attention to the fact that we last month gave their place of business as 223 Chestnut street, whereas their second store is 223 Church street, Philadelphia.

An Improvement in Churns.—No doubt that many who have used the Blanchard Churn have thought it hardly possible to improve it. But the makers thought differently, and presented the "Improved Blanchard" at the Great Dairy Fair in December last. In this churn as formerly made, the top was flat, and the portion of cream thrown against the inside of the cover would escape churning unless care were taken to scrape it down now and then and mingle it with the rest of the cream. The improvement consists in making the top of the churn of the same shape as the bottom, thus bringing all the surface within reach of the dasher, so that no cream can escape being constantly agitated.

Keeping One Cow.—Prizes.

The Family Cow—How to Keep Her.

It is perhaps safe to say that there are a greater number of persons who keep but one cow than there are who own ten or more. No doubt many more living outside of closely built cities would gladly lessen the cost of supporting their families and at the same time add to their comforts and even luxuries by keeping a cow, did they know *how* to keep her. There is a general notion that keeping a cow requires a pasture. If a pasture is not necessary, how get along without one? One has heard that half an acre of land will supply food for a cow. How? Dairymen and farmers can learn how to treat herds as a part of general farm management, or in treatises on the dairy. There are works on cows, but none on the cow. Who knows how little land will keep a cow, and how can the most be produced on that little? It is not a question of large farming, but of high farming; not of dairy farming, but of dairy gardening. To call out the best information required to enable one to keep a single cow with the best possible results, the Publishers of the *American Agriculturist* offer

Prize Essays on Keeping One Cow.

The Essay need not discuss the selection of the cow or the differences in breeds. Let the writer assume that one has a cow—the best he can get, or his means allow—and takes possession of a place which allows him land for his cow on the first of May. The main points to be considered are: The stabling or housing of the cow; the yard room she requires, and the storage or disposal of her manure. Then the least area of land that can be safely set apart for the support of the cow. How can that land be best managed with reference to that cow? The manner of cropping to obtain the greatest amount of food for the whole year. Shall any crops be sown for next year's use? It is to be assumed that the land is to be made to produce all that it will profitably yield, which will bring up the question of manure and fertilizers, of course considering that produced by the cow herself. What proportion of the produce of the land is to be cured for winter? Roots and keeping them. How much food must be bought, and what? The cow is to be so fed, to be so long milked, and in every respect so treated as to give the best returns of which she is capable to her owner. Time of calving. What to do if help is needed. Treatment after calving; what to do with the calf. Milking. The Essay need not treat of the disposal of or the uses of the milk.—We give these suggestions as to the kind of Essay desired, but the writer is by no means limited to these. The problem is—given a good cow, how to get the best possible returns from the least possible portion of the land through the agency of the cow. The Essays to be legibly written on one side of the paper only, and not to exceed 6,000 words (which is about two pages of the *American Agriculturist* in *this* type). Sketches for engravings may be sent if desired.

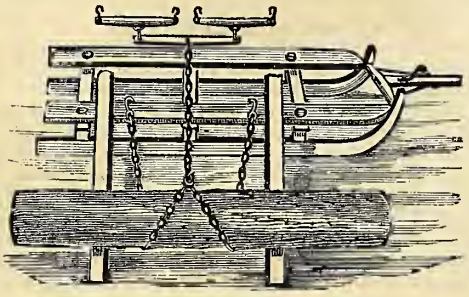
Cash Prizes.

For the Best Essay	$50 00
For the Second Best Essay	25 00
For the Third Best Essay	15 00

The Essays to be sent to the *Editors* of the *American Agriculturist* on or before April 1, 1880, in a sealed envelope with an assumed name, and an accompanying envelope containing the assumed name and the real name and address of the writer. The prizes will be awarded by a committee of competent and impartial Judges. All Essays submitted for these prizes to become the property of the *American Agriculturist.*

Market Tendencies.—Those who have watched the markets for the last ten, or even five, years, are impressed with the fact that there is now a much greater discrimination than formerly as to quality. This is true in all departments, fruits, vegetables, etc., but perhaps more marked among meats than elsewhere. Butchers as a class are getting to be very observant and particular, and this is certainly a movement in the right direction.

Loading Logs.—"L. M.," Canajoharie, N. Y., sends a sketch and description of a method of loading



LOADING LOGS UPON A SLED.

logs upon a sled, which he has found to be entirely satisfactory. The whole matter is so self evident from the engraving, that an explanation is not called for.

The Bank of a Creek in York Co., Pa., is margined by bushes 10 to 15 feet high; the owner, "A. L.," does not like the looks of it and desires to use the land; he wishes to know what he can put in place of the present growth that will prevent the stream from washing the banks, which are in some places nearly perpendicular and in others sloping.... Were the place ours, we should try to modify the present growth rather than to replace it by another, which, as the land is now full of roots would be a most difficult matter. No doubt the thicket can be narrowed, by taking out some of the shrubs upon the land side; then if the remaining shrubs would be more pleasing if more formal, we would convert them into a broad hedge, by cutting them back to a line, making the present shrubs some two feet shorter than the hight is to be finally. Now is the best time to cut them, and by an annual clipping a dense and comparatively narrow hedge screen may be very readily formed.

Killing the Live-Forever.—There is probably no other weed more tenacious of life than Live-forever. Among the various suggestions for its destruction that we have published, is that of smothering it with refuse hay, to exclude light and air. Mr. J. Northop, writes from Vermont, that he tried to smother it, and though he put wild hay over it, to the depth of 6 feet, he thought the weed increased under the treatment. One of his neighbors tried to burn it out, using load after load of wood, with no good results. Another neighbor got rid of the plant, by pouring boiling brine upon it. Mr. N. suggests digging up the plants, and putting them in the road, where they will die very quickly. He also says, if the land be rolled with a heavy roller, while the Live-forever is wet, and the field be pastured at the same time, the plant will disappear. The trouble in digging it up is to get all the roots; every fragment left in the soil will grow.

Ice-cold Water should not be taken in large quantities by horses just after they have been driven and are warm. Let them rest a while and cool off.

Do Thoroughbreds Revert?—In order to obtain facts on this important question, W. H. Brewer, Professor of Agriculture in Yale Scientific School, issues a circular containing the following inquiries:—"1. Have you personally ever known any case where thoroughbred Shorthorn cattle, because of climate, poor feed, neglect, or any other cause, have become in character anything else than Shorthorns—in other words, where, from any cause, thoroughbred Shorthorns have degenerated into animals of any other breed or type?—2. Do you personally know of thoroughbred animals of any other breeds so changing or reverting?—3. Have you ever heard of such a thing taking place, in the experience of other breeders, so well authenticated that you believe it to be a fact?"—If fully responded to, the answers to will furnish material for a valuable report at the hands of Prof. Brewer.

In-and-in Breeding.—"A. R. L." This term has been variously defined as far as words go, but the idea is about the same with all, namely: A breeding together of animals that are closely related, such as cousins and those bound by ties of even closer kinship.

The Bee Moth.—This insect is very destructive to the honey bee, the larvæ or "worms," working their way through the combs, and in time, if not attended to, becoming so abundant, that the bees are obliged to abandon the hive. The only effective way to meet this enemy, is to be "first on the ground," and prevent the moths from entering the hives. The insects may be found resting about the hives in *early* morning, and being sluggish at that time can be easily caught and destroyed.

Where to Get This and That.—Many *thousands* of letters come to the Editors every year (some with and some without "return postage"), asking where they can obtain from trustworthy parties, implements, animals, poultry, seeds, plants, fertilizers, and a great variety of other things, all of which questions we try to answer when we can. But nine out of ten of these letters, and much valuable time of both writers and respondents, would be saved, if the inquirers would take the little trouble required to just look through the advertising columns, where usually, in one number or another, several parties announce the very things asked about. We try to keep out all parties not trustworthy—and do not admit any advertisers whom we would not ourselves patronize when wanting the things they offer. (The Editors have the "veto power" over any and every advertisement proposed for these columns.) It will always pay to read through the business columns to see what is offered and by whom, and useful hints are often derived from reading what others say and how they say it. New ideas are thus started up in one's mind.—When corresponding with any of our advertisers, or sending for catalogues, etc., it is well to state that you are a reader of *this* Journal. They will know what *we* expect, and what *you* expect of them as to prompt and fair treatment.

Heavy Pigs.—"Dr. C. E. B.," Stonington, Ct., sends an account of some pigs raised by him, crossed Berkshire and Chester Whites, which weighed when dressed 546, 532, and 437 lbs. respectively, being 14 months old; also two spring pigs 8 months old, which weighed 370 and 404 lbs. They were fed on milk and meal, and were sold at 6 cents a pound, which left no profit.

Sundry Humbugs.

The readers of this column are aware of the frequency with which we have referred to Wall Street speculations. For over a year there has been no one subject upon which we have had so many inquiries as those relating to the circulars sent out by parties in and near Wall Street. These circulars, in some cases a single sheet, and others a handsome pamphlet, showed very plainly that, were their figures true and did everything work as promised, a small investment would soon give a large return; and it was made so clear, that one with a few hundred dollars to start with could soon become a millionaire, that very many sent their money without hesitation to those issuing the tempting circulars; others more cautious wrote to us to inquire.

LETTERS CAME BY HUNDREDS,

all of the same purport; with scarcely an exception the writers wished to know the "responsibility" of the parties. So well were the schemes presented that no one seemed to doubt that it was all true, and each seemed to feel that if the parties could be trusted to use his money in "puts and calls," "special privileges," and all the rest, his fortune was sure. Our carefully made inquiries only discovered that the various parties kept large bank accounts and had abundant capital. Indeed, some of these parties brought us strong recommendations as to their responsibility and even respectability, and made us the tempting offer of many hundreds of dollars to insert their advertisements in the *American Agriculturist*. But we could not accept the lucrative offers, and thus become accessory to what seemed to us would be bad for any of our readers thus invited to invest. A singular feature in the matter all along has been that in all this correspondence there came *not a single complaint*. Though all seemed favorable, we all the while felt that there was a screw loose somewhere. According to the statements, investments of $5 and $10 were welcome; the Brokers would make these into $50 and $100, and gladly, for a small commission. Now if these brokers had abundant capital, why didn't they invest that, and get the *whole profit* for themselves, instead of asking for $5 and $10 from the farmers in Kansas, Minnesota, and everywhere else to use, when they had a plenty of their own?

A LITTLE COMMON SENSE

is a capital thing to apply in such cases. Common sense taught us that these circulars showed that money could be made altogether too easily. Common sense indicated that were there such easy and safe methods of making money, those who discovered them would not tell all the world and advertise for strangers to come in, but keep the secret for themselves and intimate friends. This view of the matter, and the general "ear-marks" that one can hardly describe, but which, whoever has had long to do with such schemes, "feels in his bones" rather than sees with his eyes, made us quite confident that there was something rotten about it. We had had not a single complaint, and their bank account was large, so we had no grounds upon which to base an exposure of the parties themselves. (It took months of careful, earnest investigation and trap-setting by sharp detectives to finally unearth their swindling.) But we could help our readers, and warn them against the persuasive circulars by an exposure of the business without reference to the parties engaged in it. Nearly every month, for a long time, we have endeavored to show how stock speculations of the kind proposed were regarded in business circles, and that the sound, reputable merchants, bankers, brokers, etc., all looked upon the "put and call" business as *the meanest form of gambling*. But the end has come, our suspicions, or presentiment of wrong doing, are more than fulfilled. All of these remarkable "Brokers," who occupied such stately offices, and sent out pictures of them, who had such special advantages, and who could invest the money for others so profitably, turn out to be

THE MEANEST KIND OF SWINDLERS,

and must take their place with those who "shove the queer;" those who sell $15 Bibles for a dollar; the man who is in search of his cousin—in fact, they step to their places in the ranks of the great army of cheats, frauds, and swindlers, who prey upon the honest and unsuspecting, dealing in bogus stuff of all kinds, from flash jewelry to bogus lottery tickets to which there is no lottery and every ticket bound to draw a prize. In fact, it is alleged that the great Pattee, who a few years ago was the head and front of the Wyoming and various kindred lottery schemes, was actually the capitalist of

TWO OF THESE BROKERS' SHOPS.

Four of the leading establishments in this "stock" business are said to have been practically under the management of one man, Buckwalter by name. These were Lawrence & Co., Adams, Brown & Co., Allen, Jordan & Co., and Barnes, Garrison & Co., Buckwalter owning the first two entirely, and half of the others. Much trouble was caused by these scamps taking

THE NAMES OF REPUTABLE BROKERS.

Thus the house of Lawrence Bros. & Co. stands high, and the name of Lawrence & Co. was sufficiently like it to be very annoying; so one of the largest houses in the city is A. Belmont & Co.; the name of another of the concerns, Thatcher, Belmont & Co., conveyed to those abroad the idea that they were *the* Belmont & Co. The annoyance caused by these establishments, and their operations bringing discredit upon those engaged in legitimate stock brokerage, induced the Law Committee of the Stock Exchange to employ a law firm to collect information as to these operators and to endeavor to put a stop to them. At the proper point the services of Mr. Anthony Comstock, Special Agent of the Post-Office Department, were called in, and as a result the disreputable firms were hit in their most vital point—

THEIR LETTERS WERE STOPPED!

The case being reported at Washington an order came from the Postmaster General to the Postmaster at New York forbidding the delivery of all letters directed to the firms named above, and to half a dozen more all in the same game. Of course stopping their letters ended their business, for these chaps operated entirely through the mails. Next to the stoppage of the delivery of their letters the most important step is the seizure of the lists of names of persons all over the country; books containing thousands and thousands of names were seized, and these are the most important of all the assets of these concerns—the chief stock in trade. It is gratifying to know that this wicked business has come to an end, at least for the present. Perhaps those who made remittances to these firms would like to know

HOW THEIR MONEY WAS USED,

whether on "special privilege" or "put and call." They used the money very judiciously—one of the chaps "put" it in his pocket and it wasn't possible to "call" it out again. Stocks? they had nothing to do with them. They knew a trick worth two of that; besides, stock speculations are risky and some think immoral. It was a very neat business—all profit. Mr. Buckwalter's *monthly* income from the four concerns named above was to be over $22,000.—It must be a highly consoling reflection to those who have contributed their $10 or $20 to make up this amount, to read that he "is said to be handsome in appearance and singularly winning in manner."—"Winning!"—we should say so. How he *did* win!

When these schemes for making money so readily, are presented, no matter how persuasively to those living at a distance, when the figures show with convincing cer-

tainty that an investment will pay 20 to 50 per cent, it is well for those who feel tempted to remember that

NEW YORK CAPITALISTS ARE NOT ASLEEP.

They have millions awaiting investment in anything that will be reasonably safe and give a fair return. Any thing so sure as these stock schemes were *represented* to he, if it would pay 10 per cent, would be jumped at. It is very certain that no really safe, profitable business would he hawked all over the country seeking investment in small driblets. Every good and safe chance, every chance to invest money that we could commend to our friends, is wanted in New York. The very fact of its going abroad is evidence that it is not of a kind wanted here. We have given considerable space to this

BOGUS STOCK SCHEME,

as it is the most important, so far as the amounts concerned go, of anything yet attempted, and the most pernicious. It could never have been checked hut for the law that prevents the use of the mails for frandulent purposes. There will be an attempt, possibly at the present Congress, to either repeal the law, or so amend it as to destroy its efficacy. The law stands in the way of those who have a vast money interest in its repeal. It is to the direct interest of no one to lobby in its favor. The *American Agriculturist* goes into politics so far as to advise its readers to let the law-makers know that this is a most beneficient law, and one that must stand. ....Now that the planting season is near at hand

THE VENDER OF WONDERFUL PLANTS

will be around. He has already been in Norfolk, Va., with the Blue Moss Rose, for which he only asks $5. If he will bring a real Blue Rose, mossy or not, he can readily get $500, if not more. There is the firm our correspondent asks about in Geneva, hut they never authorized such a fraud as this pretended agent is. Do not buy any unusual things: Strawberries that grow on bushes, Self-pruning Grape-vines, the Peach budded on the French Willow, or any other of the marvels of horticulture... Among the old things that have revived of late is

THE SELLING OF RECIPES.

If persons who bought these recipes merely lost the money paid for them, it would not much matter, but the evil does not end here. One of the most common recipes is that for some kind of illuminating oil; sometimes it is "Solar," or "Centennial," or "French," or other high sounding name, but all are equally dangerous, as, so far as we have seen them, they have for their basis

THAT MOST DANGEROUS LIQUID, BENZINE.

There are several things added, but they do not in any manner change its character, nor is it possible to change it by the addition of anything. In view of the fact that these recipes are now sold, we must repeat our warning against them. If any one has paid a dollar or any other sum for a recipe making an illuminating oil with Benzine, do not be tempted to use it. Benzine is very volatile, and its vapor mixed with air will explode. Those who sell the recipes claim that the oil will not explode.—Of course not, *Oil* never does explode, but the vapor when mixed with air will—dangerously—fatally. It is very amusing to read the high sounding threats on these recipes, that the holder is "not to divulge or make known any of the ingredients."—"Under Penalty of the Law." Bosh!....The "Dictionary" scheme is quiet, but

"THE NEW DOMESTIC BIBLE"

offer, noticed last month appears to have had quite a run, as some papers of generally good reputation have published the advertisement. It is strange that one can read the advertisement and not see the catch. It gives a cut of a fine large Bible, and it also describes one worth $15, and then states: "In order to introduce our Bibles, we agree, upon the receipt of 75 cents, to pay the postage and other expenses, to send any reader of this paper a copy of the Holy Bible."—Mind, he don't agree to send *that* Bible. "*A* copy of the Holy Bible" is pretty good for Philadelphia; she will soon equal New York, or even Cincinnati, in the Humbug business if she keeps on.... A School of Design is a good thing in any city, but

"A NATIONAL SCHOOL OF DESIGN"

is the kind they have in Chicago. They advertise to send an "original oil painting," worth $10 or $15, for 25 cents. One of our friends seeing the advertisement thought to please his picture-loving wife. He received the painting, and sends us half of it, the other half went to the paper in which he saw the advertisement. "Original!" we haven't the least doubt of it. We don't think that any one—not even those who decorate the panels of street cars and omnibuses, could be any more original—it is the *originalest* painting we ever saw. This "School of Design" designs lots for 25 cts. in the sign painter style. Our friend should not complain; we don't think he could get such a picture anywhere else for half the money... It is so long since we have had a good, "bang up," real A No. 1 cure-all, that it is rather refreshing to get hold of

SOMETHING NEW IN THE MEDICAL LINE.

Here it is, a rather neat pamphlet, all bright and fresh from the press. It is headed: "Truth is Mighty, and Will Prevail."—If our memory serves us, we have heard something like this before. Then here is a picture; an old man on a bed, a young man, a bureau.—The room looks familiar. We must have seen that before. Then the story—these medicines always have a story. It is at one time a visit to "Old Mother Noble" (what has become of her and *his* diamonds?). Again it is Eddie Eastman among the Indians, and Eddie's wife too among some more Indians.—Eddie, "we have missed you."—All these stories come before us with touching freshness. But this story: Bedside of aged father—eve of departure to "that bourne"—universal remedy—about to be revealed—all except myself to retire—old-fashioned bureau—instructed me to touch secret spring—recipes for the manufacture and preparation of his valuable remedy."—Pshaw!—its just that same old, old story that's done service over and over again, and is again revived, and now does service for

"THE SYSTEM RENOVATOR, & BLOOD PURIFYING SYRUP."

Of course it cures everything. You have only to "purify the blood," and "renovate the system," and there you are. "Liver complaint?" read the symptoms—every one has them—"Consumption?"—read the symptoms—so many, you must have some—Remedy—Take the aforesaid—and so on through the whole catalogue. It is melancholy to think that people will read this stuff and believe it—and what is worse, take the medicine.

Starting a Fire is a familiar daily exercise for thousands of thousands throughout the United States at this time; but there are many who do not know the best way. *Concentration* is the leading feature in this little, but very important domestic duty. 1st, the fuel should be *concentrated*, that is, put together in a compact heap; and 2d, in a place on the grating where the draft can be *concentrated* upon it. These two points gained it is an easy matter to produce a brisk fire. When the kindling, which we have presupposed was dry and in sufficient quantity, is well started, the wood or coal, as the case may be, is so put on that the draft and flame will pass directly through the fuel. In starting a fire, all depends upon having the conditions right, and great loss of time, and even patience, is incurred if they are not provided.

To Dress Skins With or Without the Fur On.—"C. L. B.," Saratoga Co., N. Y. Tanning is done by means of bark or other substances, which contain tannic acid; this combines chemically with the gelatine of the skin, and forms what we know as leather. But the dressing of skins with some astringent salts—as Alum, for instance—is called *tawing*, and not tanning, as no tannic acid is used. The hair is removed from skins by some alkaline matter, as lime or wood ashes, and with small skins this may be used as a paste spread upon the flesh side and left for a few days, when the hair may be rubbed off with ease. The alkali destroys the "roots" of the hair (the bulbs in the hair follicles), and so loosens it from the skin. The skins may be *tawed* by spreading a mixture of equal parts of finely powdered Alum and Salt upon the moist flesh side, doubling each one, or laying pairs with the flesh sides together and putting them away for several days. After the skin has taken the character of leather, it is to be stretched, scraped, rubbed with chalk and pumice stone until smooth and pulled and stretched while drying to make it soft.

Eggs from Different Breeds of Hens.—A western egg-raiser, from his own and others' experience, formulates the following table of weight and number of eggs produced by different breeds of fowls:

Kind of Breed.	*No. of Eggs per pound.*	*No. of Eggs per year.*
Leghorn	9	160
Hamburgs	9	150
Light Brahmas & Black Spanish	8	130
Polish	9	125
Black and White Cochins	8	125
Dark Brahmas	8	120
Plymouth Rocks	8	115
Bantams	16	90

Cross Breeding of Sheep.—"B. Bro." Merinos are greatly improved as mutton sheep by crossing with Cotswolds or Leicesters; the former cross makes a large heavy-bodied sheep, with a valuable, medium, long combing wool; the latter cross is not so favorable, but is a good mutton sheep. The information given on cross breeds in "The Shepherd's Manual" contains all that has as yet been learned or done in this way. Cross breeding must be done from year to year, and it is not a permanent operation, for after two or three crosses the produce is not to be distinguished from the pure breed used for the male animal.

Census Assignments.—Prof. C. S. Sargent, of Harvard University, has charge of the department of Forestry, and Prof. W. H. Brewer, of Yale College, is employed as expert on Cereals. The Cotton is placed in charge of Prof. Hilgard, of the University of California, and special work in the agricultural department, has been assigned to Hon. J. R. Dodge. Such names as these, are an assurance of thoroughness in this important work.

A Wooden Mailing Money Box.—Since fractional currency has gone out of use, remittances by

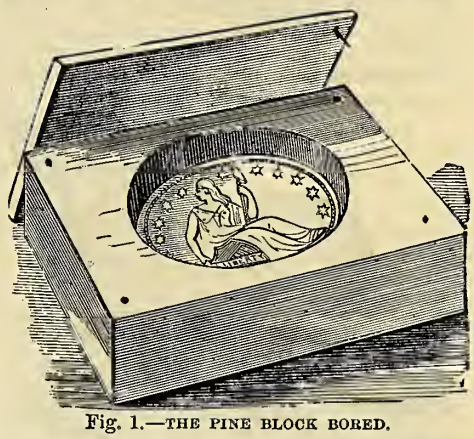


Fig. 1.—THE PINE BLOCK BORED.

mail, of sums less than a dollar, must be made in coin. The sending of coin by letter is both inconvenient and unsafe. A heavy coin is easily detected, and can be abstracted by a dishonest person, or it may wear its way through the envelope of its own weight. A correspondent recently having occasion to send us some silver "change," inclosed it in a wooden box, which he made as follows: A pine block, a trifle larger than shown in figure 1, was bored nearly through in the center, with 1¼-inch auger bit, the "worm" passing entirely through, and thus furnishing a small opening to allow the postmaster to inspect the contents. A cover of thin pine, fastened by four tacks completes the box, as shown in the engravings. The whole can be made in five minutes. When filled, wrapping paper suitable for the directions is *tied* around it with a string. The post-office regulations require 2nd and 3d class matter to be tied. A box of cigars *nailed* is subject to letter postage, and so of other boxes nailed together, if the contents are not visible. We have illustrated the box as it shows ready resources in an

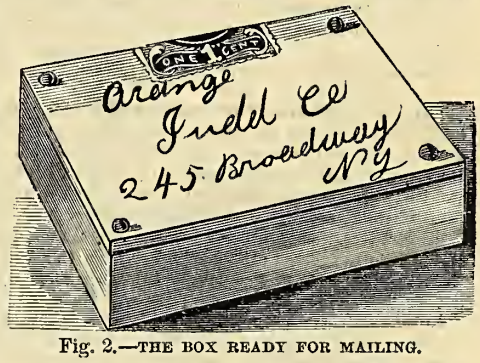


Fig. 2.—THE BOX READY FOR MAILING.

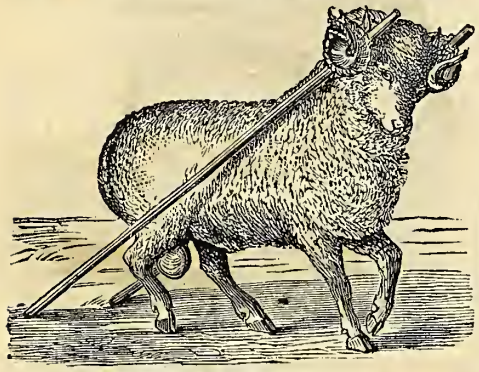
emergency. Our correspondent did not postpone or give up sending the amount of his subscription, because he had only coin. Coin would not be safe in a letter, he had no suitable box, so he at once made one. We have received insects sent by mail, put up in wooden boxes in a similar manner, though in these cases the bore was smaller, and made in the direction of the grain of the wood.

Sowing Clover Seed.—Just after a light snow is a favorite time with many in which to sow clover seed—as the seed can be distributed very evenly, and it falls into a good moist place as the snow melts. If Red Clover is sowed alone, about 20 pounds per acre should be used.

The Agricultural College of Japan.—This Institution has been in existence for three years, and a large number of students have been educated in it. The government appreciates its work and its needs by engaging foreign teachers and aiding it in other ways.

Sharpening the Horse-Shoes.—At this season which abounds in ice, the horses' shoes demand attention that they do not become smooth and thereby subject the animals to cruel strains that may develop into wind-galls, ring-bones, etc. The horse's instinct teaches him he is unsafe with smooth shod feet when driven upon icy roads, and he is constantly in fear, and trembling, lest he slip and fall. It is costly and cruel to drive horses thus shod. The calks should be of hard steel and kept of even length that the weight of the body may be distributed evenly over the muscles of the limbs. If one has not "Self-Sharpening Shoes" it will pay to make frequent calls at the blacksmith's shop so long as the ice lasts. Give the horses a safe footing.

Butting Rams.—The butting of an ugly ram, and especially of one just starting out in the business, is not to be winked at. Too many valuable and otherwise harmless animals have been made intolerably ugly by boys, and sometimes older persons, teasing them in butting while they were young. To cure a ram that is continually on the defensive is not an easy task. The following has been suggested as a remedy, founded upon the fact that when a ram butts, he steps back a few feet to prepare for his work. Two long poles are attached to



REMEDY FOR BUTTING RAM.

the horns, one on each side, to drag on the ground, as shown in the engraving, the backing up of the ram will be so interfered with by the poles, and it will upset him so much that his butting intentions will be modified or diverted. In a short time one stick will be sufficient, and after a while the cure will be effected. This treatment will be employed only when the ram is specially valuable; else he had better be fattened and pass into mutton.

Apple Trees in Kansas.—R. Stauffer, Nemaha Co., writes that the warm weather last autumn caused the young apple trees to bloom and push their leaves; also that some trees have the bark killed upon one side of the trunks. It would be for the future good of the trees that have bloomed to cut back the shoots to strong buds that have not started. The injury to the bark is due, as he suggests, to the sun in winter, and may be prevented by shading the trunks; this may be done by loosely winding a hay or straw band around them, or by binding a few corn-stalks upon the sunny side. Another method is to tack two light boards together like an eaves trough, and secure this against the trunk during winter and spring.

The Ohio State Horticultural is one of the societies that always have interesting annual meetings and the accounts of the one held at Canton, Stark Co., in December last, show that in spite of rain and mud, there was this year the usual good time. The election resulted in the reappointment of the former corps of very excellent officers, among whom are Doct. John A. Warder, North Bend, of Pres't.; Geo. W. Campbell, Delaware, Treasurer; and M. B. Bateham, Painesville, Secretary.

Lanterns in the Barn.—Caution is always necessary when kerosene is burned, but never more so than when used in the barns and stables. A candle well secured within a frame of glass for use in the barn, is cheap, handy, and, above all, comparatively safe, even if it should fall from its support. Do not use any lantern in the barns and stables if it can be possibly avoided.

Mending Harness.—When a harness breaks it always is just at that time and place when the break is of the greatest inconvenience. There are two ways of meeting this matter. 1st, by keeping the harness in good repairs, that no weak spot may exist when the trying time comes; and second, to be prepared for a break, should it come, by carrying a coil of strong copper wire either in the pocket or in some place in the vehicle, and a knife for doing the necessary cutting and punching of holes. A good teamster should be an expert in meeting all "break downs," by being able to overcome them.

Doing Chores.—Much time is lost by farmers in doing the chores. This loss may arise from several causes; often in the arrangement of the farm buildings, and that of the stock; "things" are not handy. The hay that is fed to the sheep is sometimes on the other side of the barn, and must be carried a long distance by the forkful. This is but an illustration of what may be the case with the corn, litter, and especially the water. Even if the arrangements are perfect, there must be a method in doing the chores: a *time* as well as *place*

"Pine Straw," which is not properly straw, but the dry, fine, needle-shaped leaves of the pine trees, makes only a fair absorbent for liquid manure, as it is so resinous and woody. For the same reason these leaves are not easily decomposed and can not rank high as an element in a compost. When any other kind of leaves, straw, leaf mould, or muck, can be obtained, but little time should be spent in gathering pine straw. If they are at hand in abundance, it will pay to use them. Their best use is as fuel, though they burn too rapidly. A few years ago some one proposed, by means of a powerful press, to make them into blocks to be used as fuel. Whether this was tested or not we have not learned.

Food and Digestion.—The value of a food does not depend entirely upon the amount of nourishing ingredients it contains, and a chemical analysis, while it may, does not of necessity show the exact feeding value of fodder, roots, etc. It may be that in the influence that the food has over the digestion its greatest value lies—stimulating it to healthy and vigorous action, etc. Thus turnips are a poor feed in themselves, worth only $2.80 per ton as far as the food elements go; but they are worth much more, as a matter of practical experience, in the relish they give the stock for dryer and more substantial food. Another reason may be found in the fact that in much food—especially the different kinds of fodder—the nutritive portions are in the cell of the plant—shut up as it were in little wooden cases. The chemist who takes all needed time for an analysis, can work at the fodder until he gets out all the nutritive matters there are in it, and use various methods of doing it. On the other hand, in the laboratory of the animal's stomach the fodder can remain but a limited time, and only the same process is used for all kinds of food, hence the animal may not be, and generally is not, able to remove all the valuable ingredients that the chemist has shown it to contain.

Curry the Cows.—No animal of the farm will show signs of neglect so soon as a cow. The coat gets rough and dirty, and the bones stand out with irregular and peculiar prominence. On the other hand, as a matter of course, good care gives the opposite appearance, and the creature is neat, clean, and plump. There is much in a good supply of wholesome food, but it, without occasional rubbing and currying, will not make the cow look and feel comfortable. It pays to curry the cows.

(*Basket Items continued on page* 75.)

Bee Notes for February.

BY L. C. ROOT, MOHAWK, N. Y.

During this month bees require but little care; while they should be left as nearly quiet as possible, the bee-keeper in the meantime may be actively engaged. In travelling through the country, I observe that not one bee-keeper in ten has taken enough interest in the business to advance beyond the use of the old-fashioned box-hive. This fact is almost beyond comprehension, when we compare this manner of keeping bees with the better methods of the present day. It would be difficult to innumerate in a single article the merits of a movable comb-hive with each comb built in a separate frame, as compared with the old box-hive with crooked immovable combs, the condition of which can be but very imperfectly ascertained. With such movable frames, the bee-keeper may avail himself of the advantage to be gained by using artificial comb-foundation, thereby securing straight worker combs. When desired, such combs may be lifted from the hive and their exact conditions ascertained. The bees may also be brushed from them, and by the use of the Honey Extractor the honey may be removed and the combs returned to the hive to be refilled. The power we obtain by the use of these frames to control swarming, is enough to command the attention of every bee-keeper. Many have said to me that if it were not for the trouble bees would give them during the swarming season, they would keep a few swarms. A minister of my acquaintance disposed of his bees from the fact, as he said, that they were sure to swarm on Sunday. All such annoyances may be avoided if the movable comb-hive is used understandingly. Do not make the mistake which so many have made, in thinking that simply securing a movable comb-hive, and placing a swarm of bees in it, will result in any marked advance over the old way. We should understand these advantages before attempting to profit by them. The facility with which the timid are enabled to perform the necessary operations in advanced bee-culture is likewise a great improvement upon the practices of earlier days. Close-fitting rubber gloves, a modern bee veil and the Bellows Bee Smoker, will enable the most timid to handle bees with perfect safety. The particular object of these remarks is to induce the beginner in bee-keeping to spend these winter months, when not crowded by the busy season's operations, in investigating these improved methods of our pursuit. After deciding upon the course to be followed, all needful preparations should be made before the busy season opens, in order that no time need be lost when the harvest once fairly begins.

Cutting Fodder and Litter.

With a fodder-cutter of the right kind, it may even pay well to cut the litter used for bedding

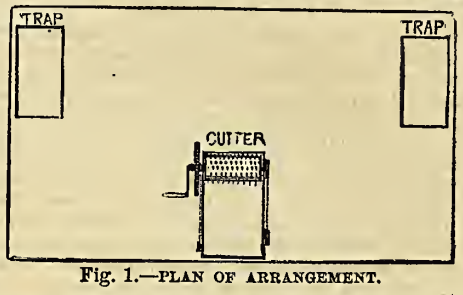


Fig. 1.—PLAN OF ARRANGEMENT.

cattle. This has been tried by the writer with advantage by means of a simple arrangement. A machine which will cut straw or coarse hay in longer lengths than is usual for fodder, is preferable to any other; cutters are now made that can be changed so as to alter the cut from half an inch to an inch and a half by the mere moving of a cam. This may be used for cutting feed or litter. A "Common-Sense Fodder-Cutter" was procured and fixed in the middle of the second floor in the cow-barn. A trap-door on each side in the floor made it easy to drop the cut straw on one side to the standing stage below, where the cows were tied up; and also to drop the cut hay or fodder into the feed-box on the feeding floor, without moving the machine. A plan of the arrangement is shown at figure 1. With the cutter referred to, a whole sheaf of straw may be cut at once into chaff 1½ in. long for litter, and if straw is used for feed, the cut could be changed to ½ or 1 inch instantly, the

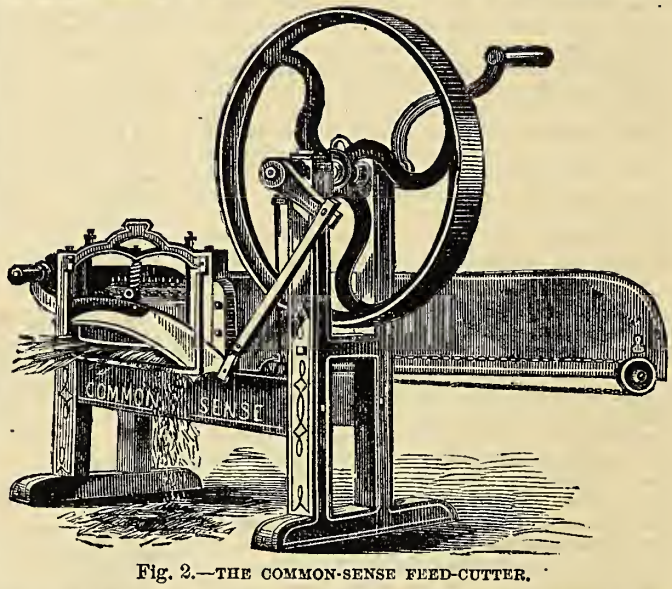


Fig. 2.—THE COMMON-SENSE FEED-CUTTER.

knife passing through 4 inches of straw or hay with the greatest ease. Either hand or power may be used, and a wind-mill attached to the end of the barn would furnish a very cheap and effective power for the purpose. One peculiarity of the cutter mentioned, in addition to its automatic and instantaneous change of cut, is that it has a direct cutting action, and a draw motion is given to the knife by its peculiar scythe-blade shape. At figure 2 we give an engraving of this particular machine. There are many other good fodder-cutters, some of which have been described and illustrated in these columns from time to time. Considering the large number, and the excellence and profitableness of these machines, it is very clear that farmers should avail themselves of their use, to cut fodder, and in many cases to cut even their litter.

Fencing and Fences.

What We are Aiming At.

Many letters of inquiry will be answered, by simply stating the object and aim of these chapters on feneing: As previously noted, the cost of fencing is enormous. Half the fencing in the country is needless and *should* he abolished, and will be when the best system of farming is adopted, and proper laws in regard to animals as "free commoners" are enacted and enforced. That time has not arrived. "Soiling" cattle will come gradually into practice in the older settled States, but a large amount of fencing will be necessary wherever domestic animals are kept at all. Almost half of our country is devoid of wooden fencing materials, and in most of the rest, timber is disappearing and increasing in cost. Wood fences,—except those of chestnut, locust, red cedar, and a limited number of otber woods, none of them abundant—decay rapidly, and need constant repairing and renewing.

Now we bave every reason to believe that Iron and Steel can be utilized in the construction of fences that will be better, cheaper, and ten times more lasting than ordinary wooden structures. The supply of iron (and steel made from iron) is inexhaustible, and cheaper modes of production are rapidly developing. The aim of these chapters is to not only gather and disseminate what is already known as to iron and steel fencing, but also to *stimulate invention* in that line. A large numher of letters from men of inventive minds, with sundry suggestions and questions, show that a good effect has already been produced. The wide-spread interest in this subject is manifest in the fact that tens of thousands of extra copies of our past two numbers have been called for.

Metal Fences vs. Prairie Fires.

There is one important point, not previously referred to, in favor of *metal* fences, posts included, for the new prairie pasture lands, where the annual burning of the grass takes place. Such fences will not be consumed, though if not standing on a strip of plowed land, they may he warped and slightly injured. As is well known, a great amount of fencing is annually destroyed by these prairie fires. This consideration alone is a strong point in their favor. As plain wire is practically useless, the barbed wire, with all its objectionable features, will be used, until a better metal fence is supplied.

Relative Cost of Iron and Wood Fence.

Many letters ask us to give the present difference in the cost of wood and iron or steel fences. We have not yet gathered all the data which we sball be able to give, but some approximate figures may be presented. For a comparison take the common post-and-hoard fence, and the Improved Brinkerhoff Steel Strap (No. 19), or any of the forms of Barhed Wire given last month on page 11. The price of these in quantity may be estimated at 11 cents per pound, 1 pound to the rod. The cost of boards 16½ feet long and 6 inches wide we will put at 12 cents each, that is, $15 per 1,000 feet board measure. which is below the actual cost at points distant from the lumher regions. Suppose also that it is practicable to set the posts 8¼ feet apart from tbeir eenters. The steel strap or wire fences require only one post to the rod. The cost of the posts we will reckon at only 12½ cents each, which is below the average. We then have

FOR 100 RODS OF FENCE.

Post and Board.—4 Boards High.		*Galvanized Steel Fence.—4 Strands High.*	
400 boards at 12c.	$48.00	400 rods at 11c	$44.00
200 posts at 12½c.	25.00	100 posts at 12½c.	12.50
50 lbs. nails at 4c.	2.00	400 staples	75
Labor about (?)	25.00	Labor about (?)	10.00
Total	$100.00	Total	$67.25

The cost of lahor will depend upon whether the posts are driven, or set in holes dug by spade, or by post augers. The cost will he only half as much for the Steel Fence, as only half as many posts are used. The cost of erecting the board fence will be several times greater than putting up the metal straps or wire. It is a very safe calculation to say that post and board fence will cost nearly 50 per cent more than the metal fence; that if 100 rods of the post and boards can be put up for $100, the metal fence will not cost over $70. No allowance is made for saturating the boards with any material to give them a fair durability. Once put up, the metal fence will outlast half a dozen wooden fences, exeept the posts, which will have the same durability in either case.

Is There Any Doubt Then

that metal fences are to be preferred on account of cost, durability, and frequent repairs? The *comparative effectiveness* of the two is the chief question to be decided; and if this be settled in favor of the metal fences, the only question will he, which is the best kind of metal fence.

Iron Fence Posts.

A serviceahle, effective, *cheap*, easily erected Iron Post, for general use in ordinary farm and prairie fencing, is now of great importance, and we give here a few more of tbe forms presented, not so much for their practical value in all cases, but as suggestive in calling out or producing *new* devices and inventions. Some other forms have been contributed, but they have not yet been perfected, or proper sketehes of them have not yet been prepared.

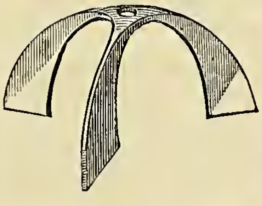


Fig. 14.

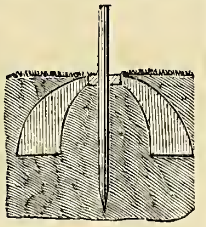


Fig. 15.

Fig. 14 represents one of several contrivances devised by the writer for supporting small or large iron hars used as fence posts. In this form three flanges, or wings, are cast in one solid piece, with a hole in the center of tbe top, through which the iron rod is inserted. Tbe wings are thin iron plates running out to sharp edges at the wide bottom ends, so that they can be readily driven into the ground, and the post bar driven through, as shown in section in Fig. 15. There may be three or four of these wings; if set in tbe right direction probably three would suffice to resist the post's swaying to either side, and also resist the ordinary strain in the direction of the length of tbe fence. The hole may be of any form and size desired, for a round bar of any size, or a flat bar, or it may be large enough to receive a small wooden post. So also the wings may he of any size, length widtb or thickness required by the character of the soil, the distance apart of the posts and the consequent strain upon each. Tbey may be curved or triangular, or of any form desired. Tbe hole may be a short tube with the wings extending out from its sides. The center part around the hole may be of any thickness and strength required. For ordinary posts in firm soil, the wings one-eighth inch thiek, 8 to 12 inches long, and 4 to 6 inches wide at the bottom ends would probably suffice, or even less than these dimensions, reducing the weight to 4 or 5 lbs. and the cost to 12 or 15 cents, or less even; while for soft, yielding soil, and for an extra strong fence, the dimensions may be much increased, without corresponding increase in weight. As the upper edges of the wings curve downward after leaving the post, they are mainly out of the way of cultivating close up to the fence.

A wooden fence post for soft, wet ground has been devised for his own nse hy Mr. John Bartlett,

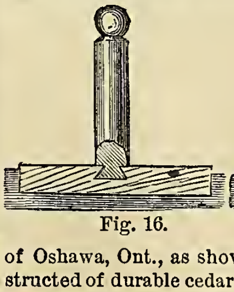


Fig. 16.

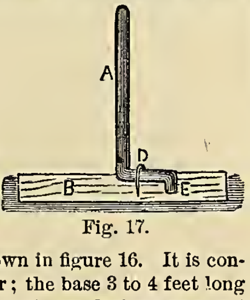


Fig. 17.

of Oshawa, Ont., as shown in figure 16. It is constructed of durable cedar; the base 3 to 4 feet long and of 4×4-inch stuff, or of any desired size and strength, is set as far into the soil as may be necessary, and the uprigbt post is dovetailed into it, as illustrated. He saturates the bed-piece, and especially the joint, with a *hot* mixture of gas tar and pitch, both to preserve the timber and to set tbe joint more firmly.—Mr. Bartlett sends the sketch, figure 17, for using an iron bar as a post on ground too soft for supporting it alone. The upright, *A*, is ¾ or 1 inch round iron, hent as shown, the end *E*, entering an auger hole, and a strong staple, *D*, is driven over the angle. The bed-piece, *B*, is 3 to 4 feet long, of any width and thickness required by the soil, saturated witb pitch as above, and set at any desired depth in the soil.—Mr. Bartlett also sends us (fig. 18) anotber device of his own for soft or other soils, which, though differing in form, is similar in principle to several other posts. This is a cast iron collar, of the form shown, of any size, and set at any depth required hy the texture of the soil. If necessary, iron rod braces may be added on two or on the four sides.

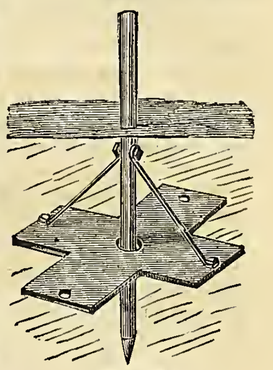


Fig. 18.

James C. Carpenter has devised a form of Fence Post, shown in figures 20 and 21. The ground piece of cast iron, shown by figure 20, is 11 inches long and 5 inches across the top, with flanges on each edge and two loops for inserting an iron rod. This is driven into the ground, as shown in figure 21, and the iron post rod driven through it. The upright is a bar of round iron, ¾ to 1 inch in diameter. Notches filed in or struck in with a "cold chisel" are made at the desired hights for the horizontal wires, and the latter are bound against the notches

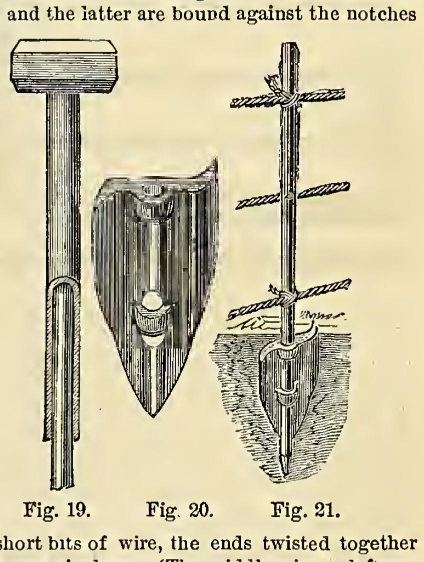


Fig. 19. Fig. 20. Fig. 21.

with short bits of wire, the ends twisted together with heavy pinchers. (The middle wire is left unbound to show tbe notch.) Weight of foot piece (fig. 20), 4⅛ lbs.; of ¾-inch diameter round bar, 1²/₅ lb. per foot, say 9¼ lbs. for 2 feet in the ground and 4½ feet above ground. Figure 19, a device for driving the iron post bars, is a hollow tube (a large gas pipe) to slide loosely over the post, witb a bammer weight upon the top.

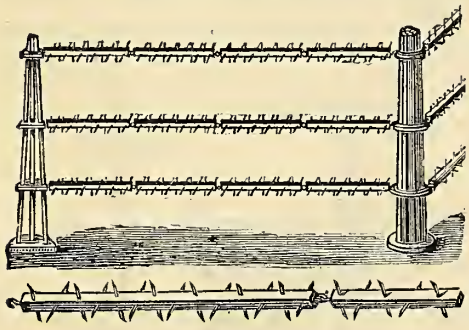
About Barbed Fences.

When beginning this discussion anew, three months ago, we confess to having been almost ready to condemn nearly all, if not all the harbed fences in general use, from tbe fact that we knew of many instances of severe injury to valuable animals, and from the strong opinions against their use expressed to us by intelligent men of good judgment, some of them having had opportunity for extended observation. Our objections have been somewhat modified by recent letters from our readers. Some write in effect, "our animals were more or less injured at first, and almost every steer gives them one trial, but hardly ever a second one; they remember the pain, and they keep at a safe distance thereafter."

An Important Suggestion comes to us from a subscriber in Western Kansas (his address we have mislaid for the moment), who has had considerable experience with barbed fences—a suggestion that may count somewhat towards obviating the strongest objection to barbed fences. He raises a line of low embankment along under the fence wires by turning in furrows from either side. The ridge thus formed, together with the furrow left on each side of it, arrest the attention and progress of animals before they actually reach the barbed wires, and helps prevent their being injured seriously.

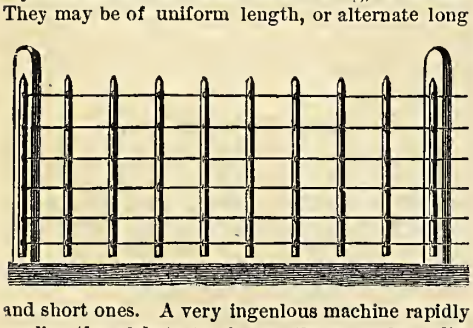
[EXPLANATORY NOTE.—The "Horse-nail Barb" (No. 1) was described in our last two articles, as practically the first attempt at barb-fencing. This has been called in question very strongly by correspondents, and it appears to be a point of some interest in the litigation among several owners of barbed-fence patents. We desire, therefore, to say that we know nothing as to the history of the matter, and care nothing. We gave the "horse-nail" story as we heard it, as it seemed very plausible, and on this account we supposed it true. Our sketch was made from a specimen now in our office, which we found in our search after samples.—The *history* of barbed-fencing may be of decided importance to patentees, and we have seen scores of pages on the subject, in print and in manuscript. What we are after in these talks is to get at the best present forms of iron or steel fence, taking into account *effectiveness, safety, economy,* and *durability*, with a little care also for good looks; and not only to gather and present to our readers all the information we can, but also to stimulate further improvements in this direction.]

No. 27. "Flexible Wooden Barbed Fence."—This is made of wooden strips, about an inch square and 4 feet long, with hooked attachments on each



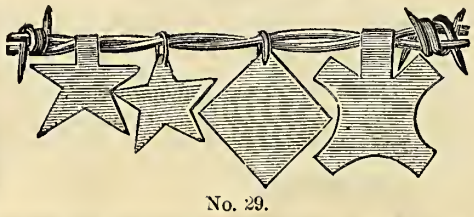
end, and pieces of wire put through at any desired distances apart to serve as barbs. After completion, the wooden strips are soaked in hot coal-tar or hot paint of any desired color, and transported in bundles. Among other points, it is claimed that it is flexible, is seen by the animals, and is little affected by heat and cold. We have not seen it in use, and can not judge as to its strength, and do not know its cost. Properly saturated it would be durable, but not be proof against prairie fires.

No. 28. "Betts' Ready-Made Wire Fencing."—This consists of six No. 10 wires firmly stapled to upright pickets, 15 to 30 in a rod. The pickets are, say 1x1¼ inch and from 2½ to 5 feet long, as desired. They may be of uniform length, or alternate long



and short ones. A very ingenious machine rapidly applies the pickets to the continuous wires, distributes and drives home the staples, and winds the whole in a roll, the rolls usually containing about 6 rods each for transportation. It is fastened to the posts with staples over the wires. Among the claims for it are: that cattle can not get their heads between the wires; that the wires mutually support each other and fewer posts are needed; that animals can see it and will not run against it; that it is portable, and can be moved by drawing the staples and rolling it together; that it is ornamental, etc., etc. The cost varies from 90 cents per rod for undressed pickets, 15 to rod (weight 20 lbs. per rod), to $1.60 per rod for 30 long and short, dressed and pointed pickets to the rod, having a weight of 32 lbs. per rod. Albert C. Betts, Patentee.

At least half a dozen of our readers have sent us samples of various forms of wooden, and especially of tin "tags," to be attached to both plain and barbed fence wire as signals which may be seen by

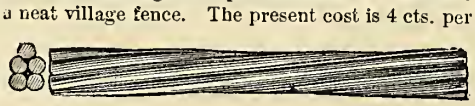


No. 29.

animals that would otherwise run against and break the plain wires, or be injuriously wounded by barbs. We select the first sample at hand (the sender's name is not given with it). The tags are bits of bright tin of any form, cut from waste scraps and hung on one or two feet apart, more or less.

No. 30.—Mr. John Bartlett, of Ontario, referring to the barbed-steel strap, No. 21, sends us No. 30, which he suggests would save the waste of cutting out, and perhaps be effective. Two cuttings are made in the side of the strap, leaving a cone-section barb in the center, and the two corners are turned out as horizontal barbs, one on either side. One objection is that the strap is materially weakened at the barbed points by so much as it is cut into.

No. 31.—"Cable" Fencing Wire.—This consists of five No. 14 galvanized wires twisted together as shown in the engraving, which gives a side view, and an end section of the exact size of the sample. It is sufficiently strong to resist breakage by any domestic animals, and will answer well where barbs are objectionable, and the first cost of less account than strength and permanence. It will make a neat village fence. The present cost is 4 cts. per



yard, or 22 cts. per rod for each cable. Manufactured by Philip S. Justice, as per advertisement.

How far and where it may be expedient to use the leading varieties of barbed fencing is still an open question for examination and discussion. Also, which of the various kinds are the best for general use, when any may be used. One thing is pretty well settled, viz.: that none of the long sharp-pointed barbs, having perpendicular sides, or those nearly so, and none of those inclined in any direction to act partially as hooks, are adapted for use along highways or where clothing will be likely to come in contact with them. None of the above barbs are adapted to small inclosures, or where *valuable* animals are in danger of contact with the long, sharp points of any form. Though they may be so shortened as to remove danger of fatal injury, disfiguring sores and scars will be produced. Something in the form of the "Brinkerhoff Improved," with sides so inclined as to prevent catching and tearing, and so short as not to produce deep incisions when struck squarely, will need to be provided. We understand that the kind referred to is not yet in the market. Whether it is or not, the field is open to inventors and manufacturers, and the public want must be and will be soon met. Hundreds of thousands of land owners, both of farms and village plots—all over the country, and especially at the West and Southwest—are desirous of changing from wooden to cheaper, more durable metal fencing, and iron posts are included in the demand—those good enough, simple enough, and cheap enough for general farm fences.

Two Years' Business—1878...1879.

The following approximate figures are exceedingly interesting, as showing not only the aggregates of several varieties of products, but also the great increase in 1879 over the previous year—1878 itself being in most things a considerable advance over the previous four or five years of depression.

	1878.	1879.	Increase.
Wheat crop, *bush.*	420,000,000	488,700,000	68,700,000
Corn crop, *value.*	$450,000,000	$600,000,000	$150,000,000
Hay crop, *value*	$585,500,000	$625,000,000	$39,500,000
Oat crop, *bush.*	409,000,000	364,000,000	*d* 45,000,000
Potato crop, *bush.*	124,000,000	181,400,000	57,400,000
Butter, rec. at N.Y. after Jan. 1, *pkgs.*	944,100 (?)	1,025,400	81,300
Cotton rec., *bales.*	4,566,200	4,894,700	328,500
Coal produced. Anthracite *tons.*	18,000,000	27,800,000	9,800,000
Gold mined	$37,576,000	$31,470,000	*d* $6,106,000
Silver mined	$37,248,000	$37,032,000	*d* $216,000
Tot'l Gold & Silver	$74,824,000	$68,502,000	*d* $6,322,000
Petroleum exported, *gallons*	329,100,000	402,800,000	73,700,000
20 Railroads, *gross earnings*	$88,987,000	$96,557,000	$7,620,000
Clearing House Exchanges	$28,327,300,000	$38,912,000,000	$10,585,000,000

The first four items are estimated, but they are doubtless not far out of the way, the figures in the table being drawn from what is considered good authority, the "N. Y. Commercial Bulletin." The above figures show that during 1879 the business done through the Clearing Houses in a few of the leading cities alone, amounted to nearly *thirty-Nine Thousand Million Dollars*—an increase over 1878 of more than Ten Thousand Million Dollars.

More Pleasant Figures.

We have before us two full years' reports for the years ending Dec. 1, in 1879 and 1878 respectively. Omitting the specie, we have the following aggregates, in specie values, for agricultural products, manufactures, etc., classed together as

MERCHANDISE:

12 *months ending*	*Nov.* 30, 1878.	*Nov.* 30, 1879.
Exports from United States	$739,895,889	$751,812,183
Imports	430,830,228	485,523,711
Excess of Exports	$209,065,661	$266,288,672
Excess of Exports for two years		**$575,354,324**

That is to say, our country has sold abroad *over five hundred and seventy-five million Dollars' worth* of its products more than we have imported from other countries. This has been paid to us largely in the form of returned government and other bonds held abroad, and partly by sending us specie, of which we received $60,239,811 more than we exported, thus—

GOLD AND SILVER.

12 *months ending*	*Nov.* 30, 1878.	*Nov.* 30, 1879.
Exports from United States	$27,322,551	$25,097,155
Imports	28,823,125	86,837,540
Excess	(—) $1,500,574	+ $61,740,385

The influx of specie may continue awhile, though temporarily stopped by the speculation in grain which has carried prices above the shipping point. This cannot continue long, for either the foreign demand, when the present stock of breadstuffs is reduced, will raise prices there to correspond with the present prices here of grain and flour, or prices here will come down to a figure at which foreign buyers will take our products. Which event will happen, we cannot of course predict with any certainty. The "probabilities" are that there will be some concession on both sides. High prices will diminish consumption greatly. It may be said, in a general way that, other things being equal, foreign nations would buy and consume twice as much of our wheat if it cost them $1.25 a bushel, as they would if it cost them $1.75 per bushel. In the latter case they would much more largely resort to other and cheaper foods. For these reasons the present speculation in grain is to be deprecated. The higher rates benefit the producers very little, and may do them much injury if the result be a failure to find a market for the remaining surplus we have to spare.

Science Applied to Farming, LIV.

More about Feeding Stuffs and Fodder Rations.

There are two very important matters connected with the economical feeding of stock which the teachings of modern science explain, but which too few farmers understand, how to adapt the food most economically to the wants of the animal and the purpose for which it is fed, and how to feed so as to make the richest and best manure.

Either the concurrent testimony of the most advanced science and the most profitable practice is false, or the farmers, of our older States especially, must improve their methods of feeding to farm most successfully. For this they need especially to—1st: Produce better foods by better manuring and culture, and by more careful gathering and housing.—2d. Carefully save the poorer foods and waste products, and feed them so as to utilize the large amount of nutriment they contain.—3d. Use a greater variety of feeding stuffs, and in proper mixtures.—4th. Use more nitrogenous foods—*i. e.*, (*a*) Raise more clover, and, where circumstances will allow, beans, peas, lucern, and other leguminous plants. (*b*) Buy cotton-seed meal, linseed meal, palm-nut meal, bran, and other nitrogenous foods. (*c*) Mix these rich materials with poor hay, straw, cornstalks, and the like, in such proportions as are fitted to the wants of the animals and the purposes for which they are fed. This will bring excellent fodder and rich manure at very low cost. To see why these facts are so, note the table below.

Nutritive Ingredients of Foods and Feeding Standards.

FOODS AND FEEDING STANDARDS.	DIGESTIBLE FOOD INGREDIENTS. Albuminoids.	Carbo-hydrates including fibre.	Fat.	Total.	Nutritive ratio.
Feeding Stuffs.					as
I. HAY.	%	%	%	%	1 to
Meadow Hay, poor	3.4	34.9	0.5	38.8	10.6
" " medium	5.4	41.0	1.0	47.4	8.0
" " very good	7.4	41.7	1.3	50.4	6.1
Red Clover, poor	5.7	37.9	1.0	44.6	7.1
" " medium	7.0	38.1	1.2	46.3	5.9
" " very good	8.5	38.2	1.7	48.4	5.0
II. STRAW.					
Winter Wheat	0.8	35.6	0.4	36.8	45.8
Winter Rye	0.8	36.5	0.4	37.7	46.9
Oat	1.4	40.1	0.7	42.2	29.9
Corn Stalks	1.1	37.0	0.3	38.4	34.4
III. ROOTS AND TUBERS.					
Potatoes	1.1	22.8	0.2	24.1	21.6
Sugar Beets	1.0	16.7	0.1	17.8	17.0
Turnips	1.1	6.1	0.1	7.3	5.8
IV. MANUFACTURING AND WASTE PRODUCTS, ETC.					
Sugar Beet Cake	1.8	24.6	0.2	26 6	13.9
Malt Sprouts	12.8	51.6	1.7	66.1	4.7
Wheat Bran, coarse	12.6	42.7	2.6	57.9	3.9
Rye Bran	12.2	46.2	3.6	62.0	4.5
Linseed Cake	24.8	27.5	8.9	61.2	2.0
Palm-Nut Meal	16.1	55.4	9.5	81.0	4.9
Cotton-seed Cake	17.5	14.9	5.5	37.9	1.7
Cotton-seed Meal, decort'd	31.0	18.3	12.3	61.6	1.6
Flesh Meal	69.2	....	11.2	80.4	0.4
Dry Ground Fish	44.6	....	8.6	53.2	0.5
Feeding Standards.					
PER DAY AND PER 1,000 LBS. LIVE WEIGHT.	lbs.	lbs.	lbs.	lbs.	
1. Oxen, at rest in stall	0.7	8.0	0.15	8.85	12.
2. Wool sheep, coarser breeds	1.2	10.3	0.20	11.70	9.
" " finer breeds	1.5	11.4	0.25	13.15	8.
3. Oxen, moderately worked	1.6	11.3	0.30	13.20	7.5
" heavily worked	2.4	13.2	0.50	16.10	6.
4. Horses, moderately worked	1.8	11.2	0.60	13.60	7.
" heavily worked	2.8	13.4	0.80	17.00	5.5
5. Milch Cows	2.5	12.5	0.40	15.40	5.4
6. Fattening Oxen, 1st period	2.5	15.0	0.50	18.00	6.5
" " 2d "	3.0	14.8	0.70	18.50	5.5
" " 3d "	2.7	14.8	0.60	18.10	6.0

Rich vs. Poor Foods—Proportions of Digestible Albuminoids, Carbohydrates, and Fats.

Now let us take a poor food, as oat-straw, and compare it with good hay. One hundred pounds of "very good" hay contains about 50 lbs. of digestible material, while the same amount of oat-straw furnishes some 42 lbs. At this rate, 120 lbs. of oat-straw would supply as much nutritive material as 100 lbs. of first quality upland hay. But it would not be worth as much for fodder. Why the straw is worth less appears when we compare the amounts of the different ingredients. The 100 lbs. of hay, with its 50 lbs. of digestible matters, furnishes 7.4 lbs. of albuminoids against only 1.4 lbs. in the straw. So likewise the hay contains 1.3 lbs. of fats, the straw only 0.7 lbs. But when we come to the carbohydrates we find just about the same amounts in both. The straw lacks albuminoids and fats, and these are the most valuable ingredients of the food. The albuminoids make all the nitrogenous tissues of the body, the lean meat (muscle), the gristle, skin, etc., all the albumin and casein of the milk, and part of the fat of the body and of the milk (butter), besides sharing in the production of animal heat and muscular force. The fats of the food are transformed into fats in the body, and share in the production of heat and force. They can not be made into muscle or other nitrogenous tissue, however, because they have no nitrogen. At least, the present evidence is entirely in this direction. The carbohydrates do not make nitrogenous tissue in the body. They are probably transformed into fats, but only to slight extent. They serve for fuel, and seem to aid in producing muscular force. They thus do a work of their own, which, if it were not for them, would be left for the costlier albuminoids and fats. So even if the carbohydrates are not made into flesh, fat, butter and casein themselves, they doubtless do what amounts in practice to the same thing by saving the other ingredients to be used for these purposes. Starch and sugar are carbohydrates, but they are at the same time valuable foods.

The reason for the inferior worth of the straw may be seen from another standpoint in the last column of the table, "*Nutritive Ratio.*" The "very good" hay has 1 lb. albuminoids for every 6 lbs. carbohydrates (1 lb. fat being reckoned equal to 2½ lbs. carbohydrates), while the straw has one pound of albuminoids to 30 lbs. of carbohydrates. According to the feeding standards, for a milch cow a ration with 1 lb. albuminoids to 5.4 carbohydrates will be appropriate, while an ox at rest in the stall will do well with only 1 lb. albuminoids to 12 lbs. carbohydrates. The best hay will serve well for making milk, while the straw has not enough of the albuminoids and fats to make it a proper food for even store cattle. There is a great difference between

Good and Poor Hay.

Upland hay cut during the period from early blossom to full blossom is easily digestible, and has a good percentage of albuminoids. But as it grows older the proportion of nitrogen decreases, and that of woody fibre grows larger, the hay becomes less digestible, the digested material is poorer because it lacks albuminoids, and finally the old hay is not so palatable. For all these reasons the late cut hay is worth far less for feeding. Grass grown on rich soil is richer in albuminoids than on poor soil. Marsh and bog hays lack albuminoids and fats. Clover, timothy, red-top, blue-grass, and the like, grown on good soil, cut early and well cured and housed, make excellent fodder. Poorly manured, cut late, and badly cured, they are very poor stuff. Much of the hay that lies in the barns all through the country is very little better than straw.

The Way to Use these Poor Foods

economically then must be to supply what they lack. To make boots of neck or split leather, or to throw the poor leather away, would be bad economy. With good leather for the parts where the wear comes, the poor leather may be used for backs and linings, and thus be made valuable. So we may feed straw, corn-stalks, and over-ripe or marsh hay to advantage, provided we put other foods with them to supply the albuminoids and fats. Now note in the table the figures for clover, bran, beans, peas, oil-cake, meat-scraps and dry ground fish. They have very little carbohydrates, but are rich in albuminoids and fats.

Cotton-Seed Meal, Linseed Meal, Palm-Nut Meal, and Bran,

are foods whose value farmers in this country are just beginning to appreciate. European farmers long since found out how much they are worth, and thousands of tons of American oil-cake and meal have been carried across the Atlantic to enrich English, French and German foods and soils. The time has come when we must keep them at home if we are going to redeem our farming. The great value of these foods is due to two facts. *First*, they supply the albuminoids and fats in which poor hay, straw, corn-stalks and the like are lacking. *Second*, they make rich manure. How they may be used with poor foods to make good rations at small cost is illustrated in the fodder rations in last month's article. Chemistry indicates, experiments prove, and experience corroborates the principles that poor foods, as late cut hay, marsh hay, straw, corn-stalks, etc., can be utilized and made very valuable by feeding with them nitrogenous foods such as oil-meal, bran, and clover hay, to supply what they lack. It is proved that such mixtures make the very best rations; and still further, that this is one of the cheapest ways to get good manure.

Dried Blood, Meat Scrap and Fish as Food for Stock.

Years ago, oil-cake used to be employed as a fertilizer. Chemistry said it ought to be first fed to stock, that it has a high nutritive value, that in going through the animal machine but little of the valuable material is consumed, and that the residue is worth more for manure than before. Experience proved that all this is true, and now nobody would think of using linseed-cake or cotton-seed meal for manure. Of late, immense quantities of slaughter-house refuse, dried blood, dried intestines, and the like, and still larger quantities of the refuse left after the extraction of oil from fish, are being prepared and used as fertilizers. These ought, like the oil-cake, to be first utilized for food. The idea, though novel to most farmers, is an old one, and has been put into successful practice in many places. In its favor is the unanimous testimony of chemical composition, careful experiments, and the experience of farmers who have used the materials with success. Against it are, the difficulty of preparing wholesome materials, which can be overcome, and the prejudice that only time and trial are needed to dispel.*

The Manurial Values of Nitrogenous Foods

is a matter worthy the thoughtful consideration of farmers. Nitrogen, Phosphoric Acid, and Potash are the most valuable ingredients of manure. Farmers buy them in the better kinds of commercial fertilizers at the rate of from fifteen to thirty cents per pound for nitrogen, six to eighteen cents per pound for phosphoric acid, and three and a half to nine cents per pound for potash. Cotton-seed, linseed, and palm-nut meals, bran, dried blood, meat-scrap, and fish, are rich in these ingredients. Mr. Lawes has made some calculations of the money values of the manures produced from different foods. This he does by assuming that certain percentages of nitrogen, phosphoric acid, and potash are consumed and lost, that the rest go into the manure, and that they have there about the same value, pound for pound, as similar ones in commercial fertilizers in which their value is pretty well settled. I give Mr. Lawes' estimates of the value of manure from a number of foods, and with them the feeding values, as estimated by Wolff, per table in December *American Agriculturist*, page 497.

	FEEDING VALUE. *Wolff.*	MANURIAL VALUE. *Lawes.*
Cotton-seed Cake	$41.40 per ton.	$27.86 per ton.
Linseed Cake	34.40 "	19.72 "
Beans	15.20 "	15.73 "
Wheat Bran	20.80 "	14.59 "
Clover Hay	14.00 "	9.64 "
Indian Meal	22.20 "	6.63 "
Meadow Hay	12.80 "	6.43 "
Oat Straw	9.00 "	2.90 "
Potatoes	5.80 "	1.50 "
Turnips	2.20 "	.86 "
Meat Scrap	55.60 "	—
Dry Ground Fish	46.00 "	—

Mr. Lawes rates the ingredients pretty high and probably allows too little for loss in passing through the animal and in the keeping and handling of the manure. Wolff's rates doubtless require modification for our markets, and the actual worth of the nitrogenous food stuffs would come up to the valuations only where they are properly used with other foods.

W. O. ATWATER.

Wesleyan University, Middletown, Conn.

* For discussion of the subject, and accounts of numerous feeding experiments with these materials, see article on *The Agricultural Uses of Fish*, in Report of U. S. Fish Commission for 1877, and in "American Fisheries" (Orange Judd Company, New York, 1880), page 258.

Farm Buildings Costing $3,000, Complete.

BY S. B. REED, ARCHITECT.

These plans are for compact, convenient and economical farm buildings. The arrangements are similar to buildings on the farm of Mr. Geo. Thorpe, in East Meriden, Conn., with some modifications to meet the more general requirements. There are several objections to having all the principal farm buildings joined together, such as the increased danger from fire, health, offensive odors, flies, dust, and filth, when the barn and house are too close to each other. The buildings shown, fig. 1, with 1st and

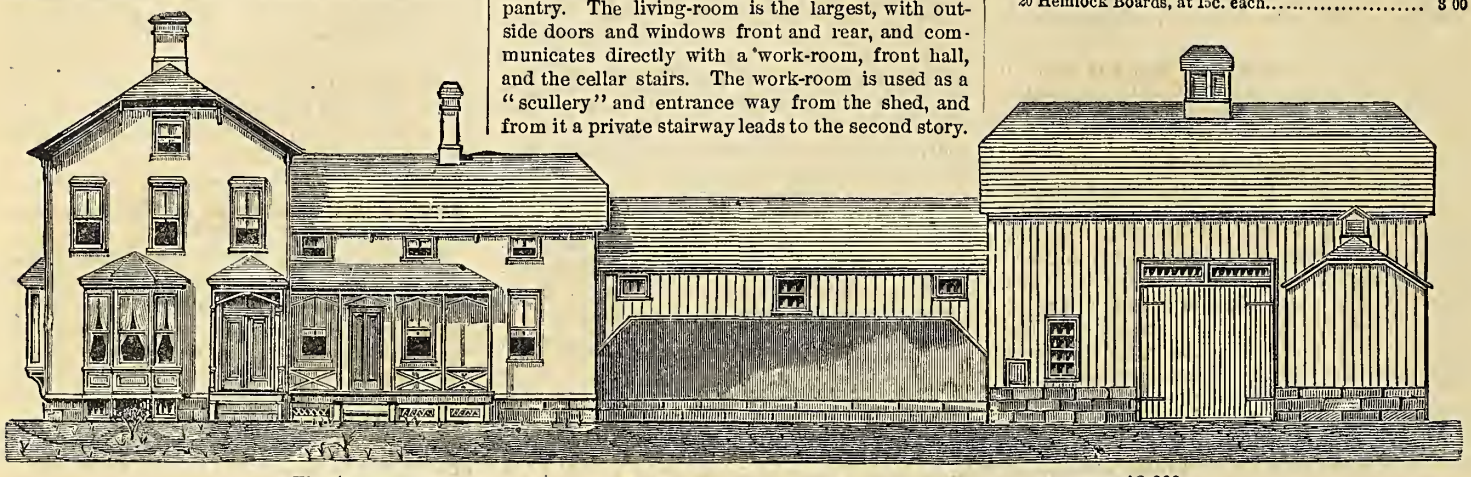


Fig. 1.—FRONT ELEVATION OF HOUSE, SHED, AND BARN JOINED TOGETHER, AND COSTING $3,000.

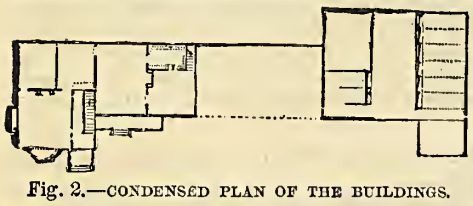


Fig. 2.—CONDENSED PLAN OF THE BUILDINGS.

2nd stories condensed in figs. 2 and 3, are well adapted, if preferred, to be erected at a distance from each other. The owner in this case considered all the objections, and concluded that they could be overcome by an intelligent arrangement of the several parts, covering all by increased insurance (which

Fig. 3.—SECOND STORY AND LOFT CONDENSED.

would be essential in any case), and also exercising a proper carefulness in management. He claimed that for all this, he would be fully repaid by increased convenience, especially as the unevenness of the adjacent grounds made it desirable to have the buildings on a limited space.....**Site.**—The grounds are slightly inclining to the right, and ending at a brook of running water at a short distance. Having a southward frontage, the north

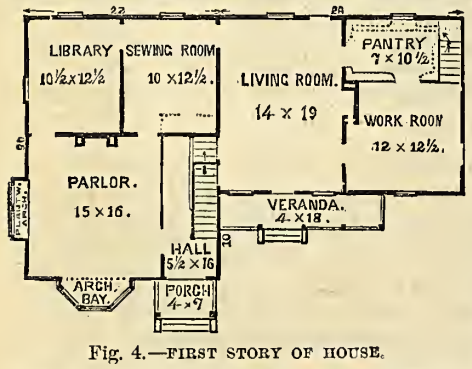


Fig. 4.—FIRST STORY OF HOUSE.

winds are shut off from the yards and principal entrances. In preparing for the building, materials and forces already on the farm were utilized, and the excavating, grading, getting out stone, hauling materials, building the foundations, digging well, etc., were done at odd spells, so that, excepting the wages of a stone-mason, the cost of these parts was scarcely felt....**Dwelling.**—The *Cellar*, 6½ feet in clear hight, extends under the whole house, with foundations showing 2 feet above ground. The *First Story* (fig. 4), has ceilings 10 feet high, and contains a hall, five rooms, and a pantry. The living-room is the largest, with outside doors and windows front and rear, and communicates directly with a work-room, front hall, and the cellar stairs. The work-room is used as a "scullery" and entrance way from the shed, and from it a private stairway leads to the second story. The parlor, at a distance from the working and living-room, has a bay-window in front, and a plant-window at the side. The hall is entered from the front porch, and contains the main stairs, with the cellar stairs underneath....*Second Story* (fig. 5); ceilings 8 feet high in the main house, and 4 to 8 feet high in the wing. It has eight sleeping rooms, a hall, passage, and six closets. The hall and passage join through a door, which may be fastened to cut off all communication between these parts when desirable. The stairs to the attic are over the main flight. The attic is floored, and provides good storage room.....**Barn.**—The foundations may be of stone when accessible, laid in trenches below the reach of frost, and the outside walls carried up to 3 feet above ground. All stone-work above ground is faced and pointed on both sides. This unusual hight of the foundations above ground insures increasd warmth to the interior, and prevents decay of the wood-work above. The main sills are laid flat on the stone-work, and thoroughly embedded in mortar, preventing entrance of air or moisture at the joinings. The hight of the principal frame is suited to the use of 16-foot tongued and grooved vertical boarding—this, added to the 3 feet of foundation, gives sufficient hight for practical use. The central space (fig. 6) has large doors at each end, admitting hay loads from front or rear. Head-lights over these doors give light to the interior when the doors are closed.—The cow-stables are 7 feet high, and are placed at the farthest distance from the dwelling. The two horse stalls are 8 feet high. If others are wanted, they can be taken from the hay. All stables and stalls are tightly floored above to prevent dust from sifting through from the hay-loft..... The **Cattle Shed** (only partly shown).—The rear and end foundations are of stone, the same as the barn. The open or lower portion is 8 feet high, with fodder-racks and mangers along the side. A door in the side leads to the grounds at the right. The upper portion is 4 feet high at the plate, has a door opening to the yard, and is floored for a hay-loft. **Wagon Shed.**—The foundations correspond with those of the dwelling. The lower portion is 9 feet high—sufficient for top-carriages. There is space for a wagon and feed-bins, besides leaving a covered-way from the house to the barn. The entire front is unobstructed,—a strong truss supporting the upper part. Flap-doors at the rear, swinging upwards, give summer ventilation. The upper portion, floored over, and lighted by six small windows, answers for a repairing and storage-room. A trap-door in the center (fig. 3), and a strong hook for tackles, in the ridge above, facilitate lifting heavy articles. Sleighs, wagons, hay-rakes, plows, or any farm utensil may be easily raised to the shop for repairs or storage....**Cost.**—The following *Estimate* of materials and cost is given *separately* for the principal parts. Everything is plain and substantial.

DWELLING ESTIMATE.

100 yards excavation, at 2 c. per yard	$ 20 00
1,400 feet Stone-work (complete), at 8c. per foot	112 00
45 feet Blue Stone, at 15c. per foot	6 75
3 M. Brick (complete), at $12 per M	36 00
790 yards Plastering (complete), at 25c. per yard	197 50
5,000 feet Timber, at $15 per M	75 00
100 Joist, 15c. each, $15; 275 Wall Strips, 11c. each, $30.25	45 25
547 Siding, 6 in., 16c. ea., $87.52; Cornice Materials, $28.115	52
300 Shingling Laths, at 6c. each	18 00
52 bunches Shingles, at $1.25 each	65 00
20 Hemlock Boards, at 15c. each	3 00
250 feet Tin, 72 feet Leaders	32 00
375 Flooring, 8 in., at 18c. each	67 50
Porch and Veranda (complete)	42 00
5 Cellar Windows (complete), at $4 each	20 00
2 Bay and Plant Windows (complete)	65 00
15 Plain Windows (complete), at $8 each	120 00
5 Small Windows (complete), at $5 each	25 00
32 Doors (complete), at $6 each	192 00
Mantels and Shelves (complete)	32 75
Stairs (complete)	60 00
600 lbs. Nails, $18; Incidentals, $41.73; Carting, $20	82 73
Carpenter's labor not included in the "complete" above, $280; Closet Finish, $12; Painting, $125	417 00
Total	$1,850 00

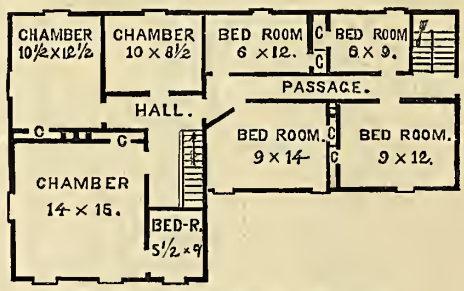


Fig. 5.—SECOND STORY OF HOUSE.

ESTIMATES FOR BARNS AND SHEDS.

31 yards Excavation (complete), at 15c. per yard	$ 4 65
1,400 feet Stone-work (complete), at 6c. per foot	84 00
7,000 M. feet Timber, at 15c. per M	105 00
360 Siding, at 26c. each, $93.60; 200 Joist, $30.00	123 60
Cornice Materials	8 00
500 Shingling Lath, at 6c. each	30 00
90 bunches Shingles, at $1.25 each	112 50
2 Ventilators (complete)	15 00
11 Windows (complete), at $4 each	44 00
7 Doors (complete)	30 00
40 Flooring, 2 in., at 40c. each	16 00
178 Flooring, ⅞ in., at 25c. each	44 50

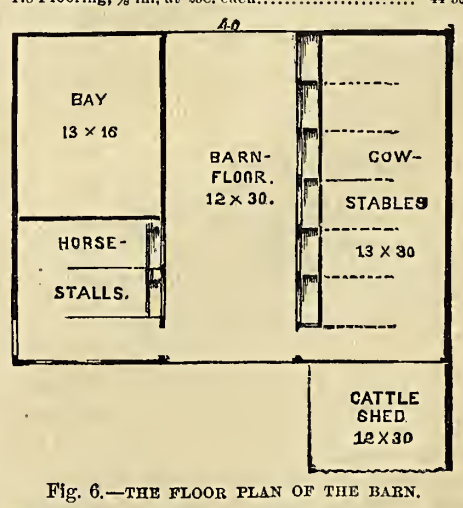


Fig. 6.—THE FLOOR PLAN OF THE BARN.

500 lbs. Nails, $18.00; Carting, $20.00	38 00
Painting (complete), $75.00; Incidentals, $19.75	94 75
Carpenter's Labor not included above	200 00
Total	$950 00
Wells, Cisterns, Pens, and Yard Fences	$200 00

RECAPITULATION.

Dwelling	$1,850 00
Barns and Sheds	950 00
Wells, etc.	200 00
Total	$3,000 00

The Angus Polled Cattle.

The engravings on this page are portraits of some Angus Polled cattle, popularly known as "doddies," bred by Mr. Thomas Ferguson, of Kinnochtry (Kinnochtry), near Coupar-Angus, Scotland. We have a full account of this famous Kinnochtry herd, sent by Mr. Alexander Ferguson, the son of Mr. Thos. Ferguson, and we regret we can find space for only a short transcript of his extended article. Mr. F.'s herd was started in 1835, and since then has been under a course of constant improvement, until it is now a model herd of these useful and much esteemed cattle. The growing popularity of the polled breeds in the United States is to be noted not only among breeders, and graziers of beeves, but dairymen are losing their prejudice in favor of the dangerous and injurious horns, and are more and more favorably inclined towards polled animals. A remarkably graceful and beautiful polled cow, a cross between a polled bull and a Jersey cow, was exhibited at the last N. J. State Fair, and attracted much attention. It is unquestionable that a useful, docile, and harmless race of cross-bred dairy animals might be produced by crossing our best native cows with polled bulls from cows selected for their milking qualities. The polled cattle have been bred long enough to thoroughly establish their peculiarities; and their prepotency is so strong as to stamp their hornless character upon their progeny with almost unfailing certainty. That a large majority of the calves got by polled bulls are also polled, has already been proved by the successful experiments of the late Mr. Grant, of Victoria, Kansas, from whose herds polled grade steers have already come to market.

Fig. 1.—ANGUS OR POLLED BULL "SHAH."

The Kinnochtry herd owes some of its excellence to that of Mr. Hugh Watson, of Keillor, a farm near to Mr. Ferguson's, where Mr. Watson had been engaged in improving the breed since 1808. The Keillor herd is noted for producing "Old Grannie," a cow which lived 35¼ years, and produced 25 calves, 11 of which are registered in the Polled Herd-book. She milked up to her 29th year, when she ceased breeding. "Old Grannie's" last calf, a bull, "Hugh," was used in the Kinnochtry herd, and bore a striking resemblance to "Shah," the subject of our portrait. The immediate progenitors of this herd have a direct and close ancestry for 111 years, tracing back to the original source of Mr. Watson's Keillor herd. This herd has thus the oldest and best blood in existence, and numerous prizes have been secured by animals of this strain, from that gained by "Old Grannie" at Perth, in her 6th year, up to the first prize at the Highland Society's Show in 1878, taken by "Shah," who was exhibited after having served more than 60 cows during that summer. At the exhibition of the National Society of Ireland, in 1879, *all* the prize polled animals were the produce of Kinnochtry bulls; while the prizes directly taken by members of the Kinnochtry herd number several hundreds. These cattle are accustomed to a bleak climate, and may, therefore, be expected to be hardy; but their natural vigor has also enabled them to survive and thrive in the West Indies, where, after having witnessed the failure of Shorthorns, Herefords, and Ayrshires, a Polled Angus bull still remains healthful and vigorous after several years residence in that hot climate. In short, there is no doubt of the usefulness and value of this breed of cattle, in their own home and in other countries. It remains to be shown that they can be made both useful and profitable here. For the production of beef they stand ahead of all, even of the vaunted Shorthorns. Of this there is no question. The absence of horns renders them inoffensive and harmless to other cattle and safe with their keepers; besides giving them an economical value in the market, on account of their more easy carriage. For the dairy they promise equal advantages. They are fair milkers, as they now exist, with all their aptitude for taking flesh and fat, and the milk is remarkably rich in butter. For crossing upon our large milking native cows they are considered to be of great value, and so soon as a few enterprising dairymen have, by successful breeding and use, removed the baseless prejudice against black and hornless cattle, we look for an extended introduction of polled cows into our dairies. These cattle, at least the strain under notice, have been closely but very skillfully and successfully in-and-in bred, and to this their excellence and uniformity of type are due. Such stock may be made to take on any character we wish, and it will be as easy to make dairy cattle of them, as beeves. The polled head should be the "trade mark" of the dairy, as it may now well be taken as that of the grazier of beeves. The handsome figure of the heifer, a "Favorite," daughter of "Favorite 5th," coming 3 years old, as shown by our portrait, is that of a model cow; she gained first prize at the Strathmore show in 1879, and her heifer calf is said to be remarkably promising. It is a model cow, not for the dairy, we admit, but for a square, massive, symmetrical beef animal, will rival the best of the Shorthorns. We here repeat, these animals are plastic in the breeder's hands, and may be made excellent for use in other ways than for beef. Dairy products are as indispensable as beef, and it certainly seems desirable that the good qualities of the polled breed should be turned to account in both the dairy and stall.

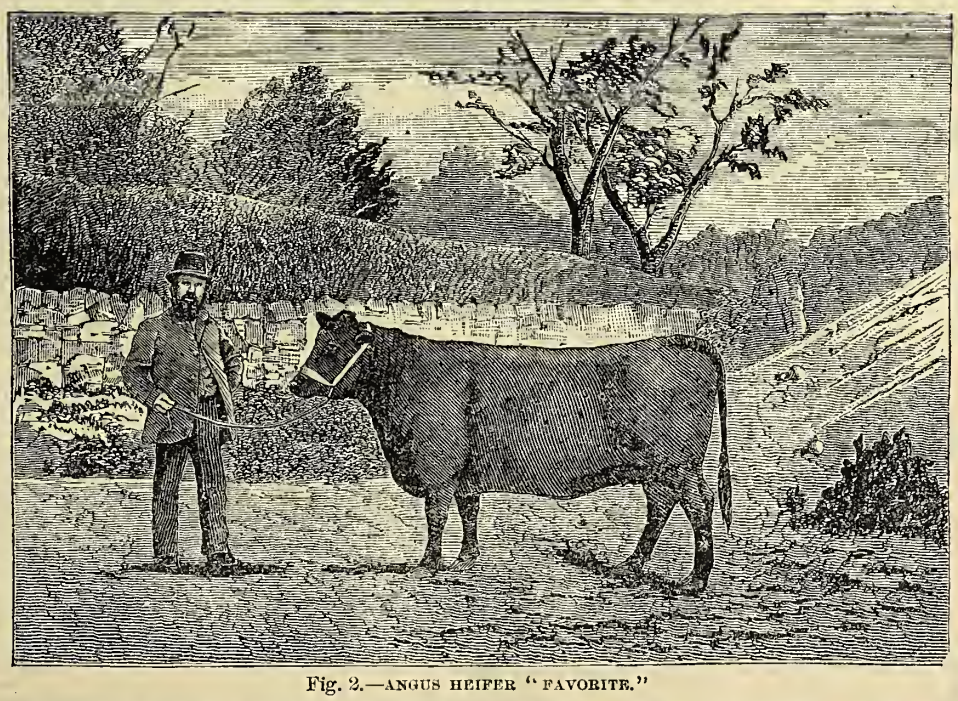


Fig. 2.—ANGUS HEIFER "FAVORITE."

Among the Farmers.—No. 49.

BY ONE OF THEM.

If I make out to break away from my little farm and from the routine of business, I am expected to tell the *American Agriculturist* readers about it.

The Massachusetts Butter Show.

An urgent letter from my old friend, James S. Grinnell — a most active man in all that affects the agriculture of Franklin County, as well as in many other good things, and who honors the position of President of the Agricultural Society of that County —decided me to go to the first State Butter Show ever held in Massachusetts. The movement for a show originated with Mr. Grinnell and Major Alvord, of East Hampton, and it was certainly a great success, as well as an instructive and interesting occasion. The time selected was when the winter meeting of the Mass. Board of Agriculture is held, butter was shown, and dairy subjects discussed in the meetings. The show was not only one of butter, but of butter-making apparatus, of which there is a large variety at every such exhibition. Among other useful things, those which most interested me were

Mr. Bond's Centrifugal Machines,

and Mr. Burnett's statements of his success in the daily use of the only one, a "Weston" machine, which has been put to the test of practical use in

this conntry. Rev. Henry F. Bond, of Northboro', Mass., has the merit of applying the principle of centrifugal force to the separation of milk and cream as an original inventor. It does not detract from this merit, but only from the profits likely to be derived from it, that the invention had been anticipated in Europe by a few months, nor that an American inventor and maker of centrifegal machines had patented a process ten years before for separating oils and pigments of differing specific gravity, which is applicable to this same purpose. [Our correspondent has been misinformed as to dates. We have a French work, printed in 1872, which describes a centrifugal chnrn, and we give in another article, engravings from another French work, without date, but which describes the machine of Maj. Sterjnsvard, of Sweden, to which was awarded a prize at the Paris Exposition, 1855! ED.]

Mr. Bond was kind enough to narrate to me in detail the steps by which he arrived at his interesting results, and I think they are worth recording. The idea occurred to him, one day, that this force, which causes all things, made to revolve rapidly in a cirele, to tend to fly off away from the center of that circle, acting as it does upon all bodies in proportion to their weight, and incremable indefinitely, might be applied to "raising" cream. After some consideration he called upon a friend and neighbor, Mr. G. F. Windsor, the proprietor of a creamery, and who had machinery whieh could be used for a test. The first experiment consisted in attaching strong wire bails to two glass fruit jars, holding two quarts each, and suspending them, nearly filled with fresh milk, upon opposite sides of a band wheel revolving upon a perpendicular shaft. Motion, with increasing speed, was gradually given to the wheel and the jars as gradually assumed the horizontal position. After two hours they were examined and the cream found to be entirely separated, and in a firm, solid mass, quite free from milk, so that it could be taken out by the hand as a lump. As to time, it was found that the results at the end of one hour's whirling were quite as good, and that fifteen minutes even served to effect a complete separation.

Large vessels holding 16 to 18 qnarts, made of tin, but very much strengthened, were tried, but the force was found to be far too great. The vessels collapsed, and one flying off, caused the other also to be wrecked almost instantly. Fortunately, the gentlemen had taken the precaution to

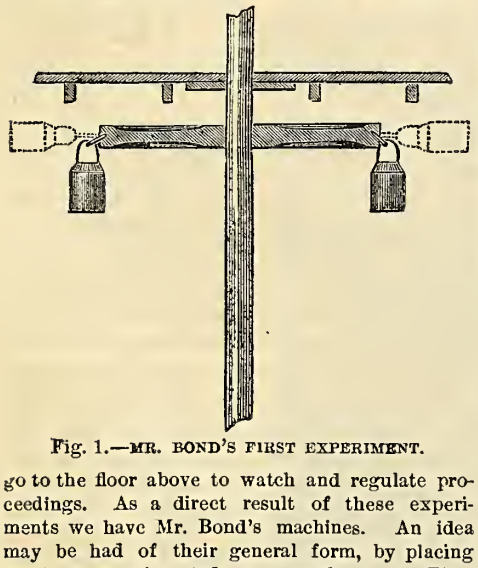


Fig. 1.—MR. BOND'S FIRST EXPERIMENT.

go to the floor above to watch and regulate proceedings. As a direct result of these experiments we have Mr. Bond's machines. An idea may be had of their general form, by placing one tea saucer inverted upon another one. They were small affairs of copper, which Mr. Bond exhibited, one adapted to taking a charge of, say a gallon of milk, and in fifteen minutes completely separating the cream, but it was not provided with any means for drawing off the ercam and the skimmed milk, while in motion. The other was arranged either to maintain a constant flow of the two separated products while the milk was flowing in, or to draw off the milk at intervals, while the accnmulation of fluid in the revolving vessel caused an overflow of cream.

It is, at first, a little difficult to get the idea of the action which takes place in these machines, and yet it is just as simple as the raising of cream in a pan or other vessel. Take, for instance, the simplest form alluded to—a vessel shaped as in fig. 3, filled to the line, *m*, with milk, and made to whirl by a band npon the pulley, *p*. The first obvious effeet will be a depression of the milk in the center, as shown by the dotted line; then this will increase with the speed, until the milk has a position as far from the center as it can get, as shown by figure 4: *m*, *m*, being the surface of the milk, now forming the walls of a perpendicular (hole) cylinder, the shaded part being the milk. It is clear that if the heaviest flnid goes farthest from the center, then the milk will, after a while, settle at the outside, while the inner wall will eonsist of cream.

Fig. 2.—TWO SAUCERS.

The next problem for the inventors was, how to secure the products thus separated, as they would mingle again, were the motion to cease and gravity again aet and bring them to a level within the vessel. This has been solved in one way by the Swedish inventors, in another by the Danish mcehanic, who has brought out one of his machines, in still another by Mr. Weston, and in two or three different ways by Mr. Bond. A difficulty which has to be enconntered, and which has probably not yet been successfully met, is this: that the cream driven off at such a high rate of speed as 1,200 or 2,000 revolutions to the minute receives damage, in that the butter globules arc broken, more or less, so that, as Mr. Burnett intimated at the meeting, the cream was half churned. It is, however, perfectly good for use as cream; but it may be a question whether the butter made from it will be of such high quality as if it were raised in the usual way. This is then the problem, in the solution of whieh the interest now centers. Mr. Burnett stated also that a green sediment, heavier than the milk, was found to adhere to the walls of the Centrifugal, and this, on examination, proves to be minute organisms inherent in the milk, and a probable chief cause for souring and the setting in of that series of decompositions which milk so rapidly undergoes at a high temperature. The separation of this matter is highly important and advantageous.

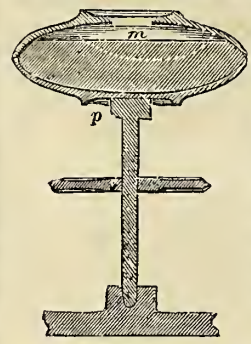


Fig. 3.

Other Dairy Appliances.

There was a good deal of improved dairy apparatus exhibited, ineluding several new arrangements for setting milk. Improvements in the "Cooley" system, the Furguson "Bureau" system, Moseley & Stoddard's "Cabinet" system, etc. The Dairy Supply Co. showed their "Perfect Milk Pail," the Nesbit & Rapp Butter Presses, which were new to most of the people, and a number of butter packages. Several new churns were shown, among them, and the newest of all, is one made by Mr. Bullard, whose oscillating churn has been highly approved. This consists of a tub balanced upon an upright rod, and made to swing round and round, guided by an iron ring, of a little less diameter than the tub. Two breakers within the tub cause the cream to dash from side to side. It is a novel affair.

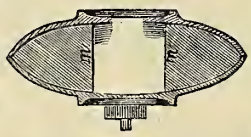


Fig. 4.

The Butter.

There were 119 entries of butter placed in competition for the liberal prizes offered. It was generally presented in ten-pound boxes. The committee seemed to have no difficulty in deciding which sample was unequivoeally *the best*, but a good deal of trouble in adjusting the awards, depending upon the mode of setting, kind of salt used, etc. The award of the first prize and sweepstakes, altogether amounting to some $125, or $130 as I am informed, developed the fact, that the recipient, Mr. Chas. E. Fisk, uses the "Perfect Milk Pail," and so far as I could learn, he was the only one who uses it of the whole 119. If any of the other competitors use a pail which excludes the atmosphere of the stable, it would be interesting to know it.

The Addresses and Discussions

were of a valuable character, developing a good deal that was new to me. Prof. Goessmann, of Amherst, stated the results of some recent analyses and investigations of corn-cobs, showing that they have a far greater nutritive value than have usually been attributed to them. In Mr. Grinnell's sketch of the agriculture of Franklin Co., he showed that the lack of railroad facilities had caused a diminution of population of from 15 to 50 per cent in some towns, while the general population of the county had increased largely. The disuse of fences seems to be greatly on the increase in Massachusetts. Mr. Grinnell pointed out to me the farm, where the road forks at the head of Greenfield Street, on which he was born, and still in possession of the family, and worked by himself, whereon there were no fences at all, not even along the highways, except surrounding and perhaps dividing one large pasture lot at a distance.

Milk and Cows.—What Chemists Say.

The last Report of the Secretary of the State Board of Agriculture, of Michigan, contains a paper on "The Analysis of Milk from Different Breeds of Cows," by R. F. Kedzie, Assistant in Chemistry at the State Agricultural College, from which we condense some of the most interesting features. To test the influence of temperature on the rising of cream, three pans of milk in every way alike, were kept at the temperature of 32° F. 55° to 60° and 75° to 80° respectively, for 24 hours. The cream was then removed from each pan, and the amount of fat remaining in the milk determined.

Kept 24 Hours.	*Fat—Per Cent.*
At 32°	1.25
At 55° to 60°	.59
At 75° to 80°	.79
Fresh milk.	3.26

Professor Kedzie's conclusion is, that 50° is the best temperature at which milk should be kept.

With the coöperation of the Professor of Agriculture, a series of experiments was carried on to determine the influence of food upon the quantity and quality of milk. While upon poor food the cows received 5 pounds cut cornstalks, 2 pounds cut oat straw, and 2 qts. of a mixture of two parts Indian corn meal and one part shorts, twice a day. During the period of high feeding the same cows, grade Ayrshires and grade Jerseys, received the cut feed as before, to which were added, 40 pounds of sliced turnips, and 6 qts. of mixed ground feed per day. The amount of milk was much increased, while the percentage of milk elements remained much the same. "If a large amount of rich food is given, a part of it goes to increase the number of quarts of milk, and the rest to the increase of fat in the animal."

The following table of averages of the different breeds, dedueed from a large number of milk analyses we reproduce in full:

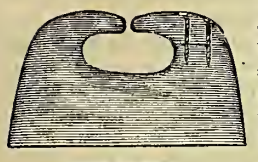
Name of Breed.	*Sugar.* %	*Casein.* %	*Fat.* %	*Water.* %	*Ash.* %
Shorthorn....	3.76	4.41	5.10	86.04	.68
Ayrshire	3.90	5.08	3.75	86.57	.70
Jersey	3.76	4.37	6.87	84.28	.71
Holstein	4.35	4.21	6.84	83.97	.61
Galloway	3.80	5.36	3.40	87.43	.67
Devon	4.23	5.29	3.96	85.71	.81
Grade.....	4.29	4.99	4.01	85.92	.79
Native..	4.08	5.21	3.36	86.64	.71

From this table we see that the Holsteins stand at the head for fat, or butter, and the Jerseys next, while for the production of casein—cheese—the Ayrshires lead, followed next by the Natives. It is to be remembered that this is looking at the subject from a purely chemical standpoint, and it is for the practical dairyman to determine how much it

costs in food, care, etc., to produce a given amount of butter, or cheese, in each case, and whether the products of different breeds, pound for pound, are of the same market value.

A Nose Jewel for Sucking Calves.

C. A. Thresher, Topeka, Kans., sends a description of an improved nose jewel for a sucking cow or calf, which can not slip out of the nose. Usually these are so made as to slip over the septum of the nose, and if they are so loosely fitted as to be slipped on, they may be forced off by the efforts of the animal with equal ease. To prevent this, Mr. Thresher suggests making one of the points loose and fitting it to the lower part by two screws, as shown in the engraving. It can not then be removed from the nose without first taking out the screws. The board should be of hard-wood, half or three-quarters of an inch thick, and may be cut out of the proper shape with a key-hole saw. The holes for the screws, 2 inches long, are then bored, and the point sawed off. There is no need to take out both the screws when fitting the board to the nose; one screw may be drawn and the point of the "Jewel" turned partly around, to be returned when fitted, and the second screw may then be put in its place and all made secure by turning it home.



NOSE JEWEL.

A Gate Without Hinges.

A very convenient gate is here described, which, having no hinges, and not being made to swing, can be used in deep snow, as conveniently as when the ground is bare. A latch post is fixed in the ground, and connected with the fence. This is upright as shown at figure 1, and is made by nailing a piece of narrow batten to a square post, and then a piece of fence strip to the batten, so as to leave a slot on the side of the post, from the top to the bottom, in which the ends of the gate bars fall, when it is closed, as at figure 3. A heel post is set in the ground, and slopes backwards, as seen at figure 2.

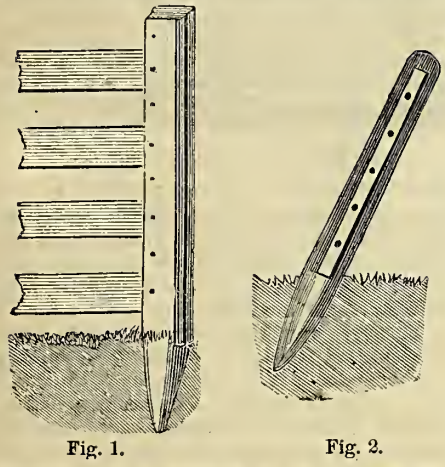


Fig. 1. Fig. 2.

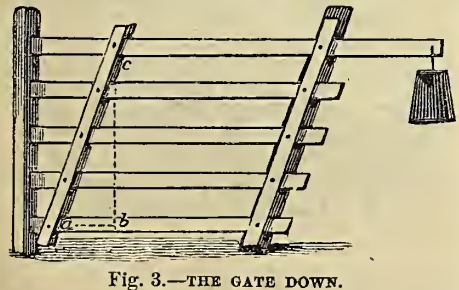


Fig. 3.—THE GATE DOWN.

The gate is fitted to the heel post by bolts, as shown at figure 3. The gate is made in the following manner. The five bars are laid close together upon a level floor. These may be of fence strips, or battens 3 inches wide, and one inch thick. The place for the lowest hole, at *a*, being chosen, the aggregate width of all the bars being added, an equal distance is laid off, as from *a* to *b* on the lower bar, and a line parallel with the ends of the bars at the front, is marked on the bars, as shown by the dotted line *b*, *c*. The upper hole is then made at *c*, and the two binding pieces are fitted, as shown in the accompanying engraving, by carriage bolts, which should work easily in the holes; the ends of the bars being kept even, as in the engraving. The lowest bar may be four feet long, which will be a convenient length for a hand gate. The rear strip is fitted parallel to the front strips, and with the bars is bolted to the heel post. The top bar is 7 feet long, and has a weight hung to the end, which nearly balances the gate, so that it may be swung up, as shown at figure 4, with but little effort, when the balance weight is sufficient to keep the bars raised. For winter use, this gate is a very desirable one.

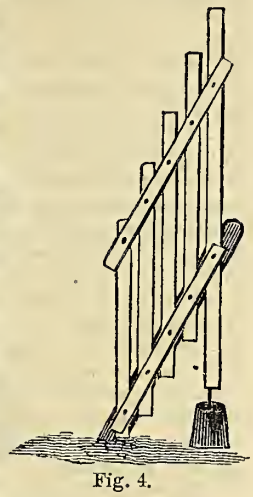
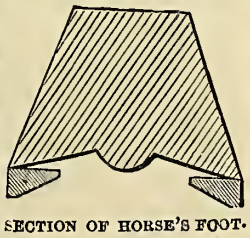


Fig. 4.

Ergot and Abortion in Cows.

An interesting account of the growth of Ergot, or "Spurred Rye," as it is often called, is given in the "Live Stock Journal," (Eng.), for Oct. 31st., by Prof. Henry Tanner. In the illustrated article on Ergot, in our October number, page 388, and also in previous articles on these destructive pests, it was shown that moisture is necessary for the development of most fungi. In England and throughout Europe generally, the past season has been remarkable for its abundant rains, and, as a result, we should expect an abundance of Ergotized grain and grasses. Such is the case, and as a sequel, to quote the Professor: "We regret to notice that the last few months have been more than usually remarkable for abortion among cows." The question of prevention is a serious one, but it can be satisfactorily answered by not allowing cows to run in pastures where the grass has gone to seed. The Ergot appears only in seed, and is an abnormal development from the substance of the seed; while the grass in the pasture is without seed-bearing heads there is no danger. The seed-stems standing about these fields, are so many danger-signals to the stock-master, who knows the liability to this production of Ergot. The scythe should be used to cut down any places in the pasture, where the grass is "running to seed." The lesson taught by the wet season abroad, is an important one for our people in its relation to the excessive production of Ergot, and the prevalence of abortion among cows.

Corns on Horses' Feet.—Corns are rarely absent from flat-footed hoofs. They are caused, in the majority of cases, by stones lodging in the space unwisely left by blacksmiths between the inner edge of the shoe and the sole of the foot, as shown in the engraving, which represents a section of a shod hoof. This causes a bruise, which soon becomes inflamed, and the horn being unyielding the products of the inflammation can not escape, and remain as a constant source of tenderness and pain. The remedy is to keep the space stuffed with tow soaked in glycerine, or otherwise to lay a leather sole under the shoe to protect the sole of the foot.



SECTION OF HORSE'S FOOT.

Does it Pay to Winter Turkeys.—The general practice in the poultry districts is, to fatten the early broods of turkeys for Thanksgiving and the later ones for Christmas, and to send each lot to market in a lump. The advantages of this are, that the warmer weather of autumn is favorable for fattening, and less food is consumed. The money also comes in a pile, and much labor is saved. But occasionally we find a farmer who feeds his turkeys straight on through the winter, selling in small lots, when he can get his price. When we ask him for his reasons, he tells us that there is always a difference in selling farm produce at the buyer's price, and in selling it at your own price. The turkey crop is mainly disposed of at Christmas—and he can always get a better price if he waits until February and March. The turkeys are all the while growing, and are wanted in the village markets at reasonable paying prices. There is also a good demand for them as breeders in March and April. It pays him to winter his flock.

Inside Fastenings for Barn-Doors.

"A Reader" asks us for some good methods of fastening barn-doors from the inside. In the Nov. number, 1877, an illustration was given of a fastening, which may just meet the case, and as this question is of general interest, the cut is again used; we present it with two other methods which have the recommendation of long, and quite general use, rather than newness in their favor. In figure 1, the bars, three in number, are made of hard-wood, 1¼-inch thick, and 3 inches wide. Two of these are made to slip loosely through iron staples, driven into the batten of the door, and are joined in the middle by a bolt. A third and shorter strip, the "guide," has its upper end fastened to the other two, by the bolt above mentioned, while its lower end is secured to the door by a screw, in the position shown in the engraving. The working of the fastening is easy to see. When the two long bars are upright, as shown by the dotted lines, their ends pass above the door, and into mortises in the ceiling and floor, and are held in place by the guide. By pushing the middle part of the fastening to the left, the ends of the bars recede from the mortises, and the door is free to be opened. Aside from the secureness of the fastening, it is always in place, and very easy to operate. In figure 2, a much simpler method is shown, which consists of a single, long, hard-wood bar, a little longer than the door, and fastened to the middle batten by a bolt. The ends of the bar pass into slots cut in the beam above, and the floor below. The upright position of the bar in the engraving, shows when the door is fastened, and the dotted line indicates where the bar is pushed, when the door is opened. In working this fastening, the bar is grasped by the hand above the bolt, and one foot is used to push aside the bottom.

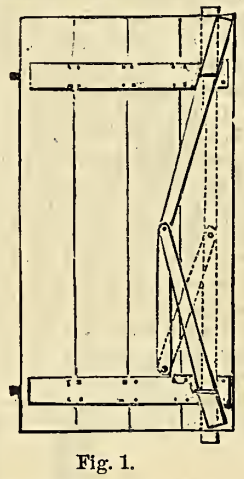


Fig. 1.

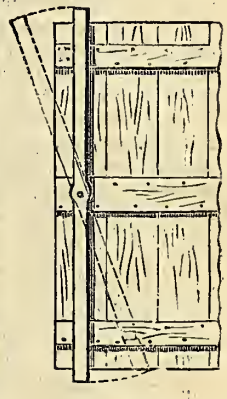


Fig. 2.

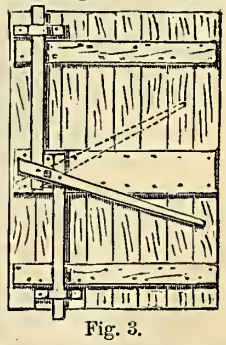


Fig. 3.

A third form of inside door fastening, is given in figure 3. This consists, as the engraving plainly shows, of two upright bars, fastened in the middle

to a lever, one on each side of the point, and the lever is bolted to the door. The other ends of the fastening-bars pass through blocks of wood, cut to fit and nailed to the door. The fastening is at the top and bottom, as in the other two methods, the bars being moved out of and into the mortises, by the long lever. The door is shown fastened, and the lever is downward; the dotted line gives the position, when the bars are withdrawn from the mortises and the door is ready to be opened.

Hints and Helps For Farmers.

HOW TO PUT UP A WAGON BOX.—To get rid of the cumbersome wagon box, or bed, is an in-

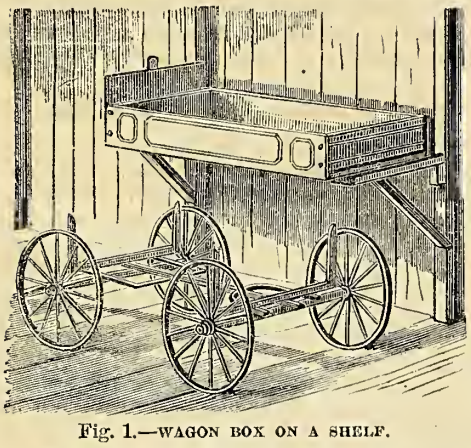


Fig. 1.—WAGON BOX ON A SHELF.

teresting question for those who have not much shed room to spare. The most convenient way is to hoist it up over head in the manner described in the *American Agriculturist*, Sept., 1875; but the easiest and cheapest method of disposing of it is as follows: To the side of the wagon shed, fix two strong bars supported by braces, as shown in the engraving. The wagon is driven close to these, the hinder end of the box is lifted off from the wagon, and the forward part swinging around, permits the end to be placed on one of the bars. The forward part is then lifted upon the bar, and the job is done in about as short a time, as it can be described; and furthermore, one man can do it alone.

A GATE WITHOUT HINGES. — A subscriber in Pennsylvania, sends a description of a gate, which is without hinges. It turns upon a pin, of 1¼-inch round iron, fixed in a block of wood or a stone, under the heel-post, and a pin bent to a proper shape, fitted in the top of the heel-post, as shown

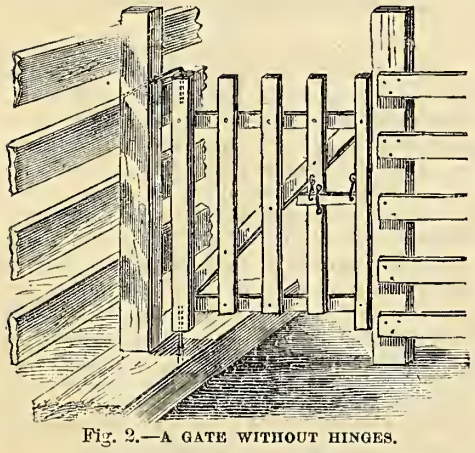


Fig. 2.—A GATE WITHOUT HINGES.

at figure 2. This method of hanging a gate is cheap, simple, and more secure, than to use hinges.

NON-FREEZING PUMPS.—A mute but very eloquent expression of disappointment, is frequently given on a cold morning by a number of thirsty cows standing around a water trough, and a pump solidly frozen up, while their owner is vainly trying to thaw out the pump, by pouring hot water into it from a kettle. If those thirsty cows could speak, they might give some good advice to their thoughtless owner, but it is their fate to suffer and bear such disappointments, without power of remonstrance. We will offer a little suggestion, as to how the trouble may be avoided. In the best pumps, such as the "Universal" and others which are continually brought to notice in our business columns, provision is made to avoid freezing up in cold weather. While the "Submerged" pump, being entirely under water, can not freeze, unless ice forms at the bottom of the well. Some farmers are not so fortunate as to possess anything better than a common wooden pump, yet even this may be arranged in a simple manner, so as to be always in working order, in the coldest weather. Remove the covering of the well, and bore a half-inch hole in the pump-tree, 2 feet below the surface of the earth. In this hole, insert a tube of elder wood, with the pith removed (fig. 3). When the pumping is done for the time, the water which is left in the pump, will escape from the tube, and freezing will be prevented.

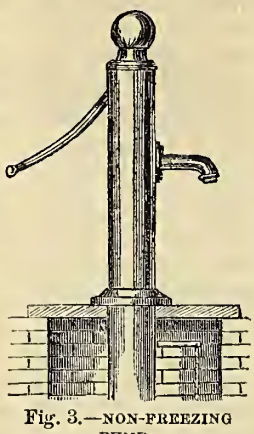


Fig. 3.—NON-FREEZING PUMP.

POULTRY FOUNTAINS.—"J. H. S.," Quincy, Ill., recommends a simple water fountain for poultry. This, (fig. 4), consists of a common stoneware jug, which is filled with water, and inverted in a basin, or wooden trough. A peg may be fixed in the trough so as to enter the mouth of the jug, and prevent it from being pushed to one side. Four stakes driven in the ground, or otherwise arranged, so as to keep the jug always in its upright position.

A WESTERN HAY GATHERER.—It must not be supposed, that in the great wheat growing regions of the northwest, grain only is produced. The fact is, that those vast prairies are magnificent grassy meadows, which in places yield as much as four or five tons of hay per acre. It is here where the "Blue-joint" (*Calamagrostis Canadensis*,) so well known in the broad "beaver meadows," and river-flats of the Northern, and Western States and Territories, flourishes so luxuriantly; and this grass, when cut in good season, is found to be equal to the best of our cultivated grasses for hay. A large quantity of this hay is cut every year, and put up for the purpose of supplying the numerous teams employed on the enormous wheat farms which are now worked in the localities referred to. Cheapness of operation is a marked necessity in doing business in a large way, and the hay cut upon those broad prairies, is put up for about one dollar per ton. The method of working, is as follows: The grass is cut by mowing machines, and as it rarely rains, the cutting goes on steadily until sufficient has been laid down. A rake is then employed to gather, and carry it to the stacks. The implement used, is a long frame, which is drawn upon runners, as shown at figure 5, and is made of a principal bed-piece or sill to which the runners are fastened. Side posts are fixed to the runners, and these are connected by cross-bars which confine the hay. Long rake-teeth are inserted in the bed-piece, and these gather up the loose hay, which is piled up in the frame. When this is filled, it is drawn to the stack. It is readily seen that this contrivance may be made of varying capacity, either small enough for use in getting in hay on a small farm, or large enough to gather a ton at once if needed.

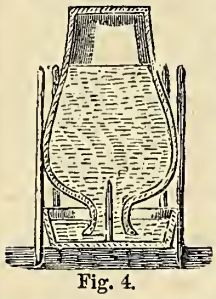


Fig. 4.

A HAY WEIGHING RACK.—"L. A. W.," gives us a description of a rack for weighing hay. It is made to rest upon a platform scale, and is five feet long, two and a half feet wide, and higher at the back than at the front, as shown in figure 6. It is made of light boards, and will hold 350 lbs. or more of hay, which may be weighed at one time. In using the rack, small blocks are put under the sides, *a*, *a*, and when it is filled, these are knocked out so that the rack drops upon the platform of the scale. By attaching cords to the four corners of the rack, the hay may be weighed by means of a common steel-yard of sufficient size for the purpose.

What is Atavism?

The term Atavism, from *atavus*, an ancestor, is applied to the recurrence of any peculiarity of an ancestor in a succeeding individual, after an intermission of a number of generations. An illustration will make the above definition clear. A herd of polled hornless cattle had existed for a long time in the Kennebec Valley, but finally became extinct. Thirty years after the last hornless cow was killed, a polled animal made its appearance on the same farm as an out-crop of the old herd. Under the head of *Reversion*, Mr. Darwin gives many examples of atavic descent. Striking instances of atavism are found among pure-blood pigeons, where there is an occasional bird with the characteristics of the wild pigeon strongly developed. During the last century, certain breeds of sheep have been bred with scrupulous care, yet now and then a spotted or "black sheep" makes its appearance. The same tendency to revert to an old ancestral form is possessed by plants, and especially is this the case if there is provision made by nature for inter-crossing, and the formation of hybrids. Dr. Miles, in his "Stock Breeding," mentions a case where a woman had a sixth finger on one hand;

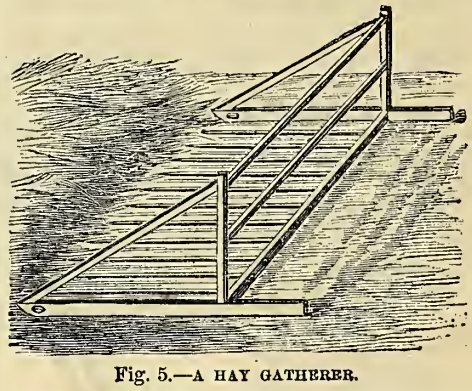


Fig. 5.—A HAY GATHERER.

out of eight children, only one possessed an extra finger, but both hands were affected. One of the sons had two sons, and seven daughters, all with hands as usual. One of these daughters had a son with six fingers on each hand. In this case the defect was absent for two generations, and then returned to the family, appearing in both hands instead of one.

The medical journals give cases where insanity, and other striking disorders have been traced back to some remote ancestor; the trouble, as it were, retaining its hold for a number of generations unobserved, and then came out because the subject was especially adapted for its development. Such

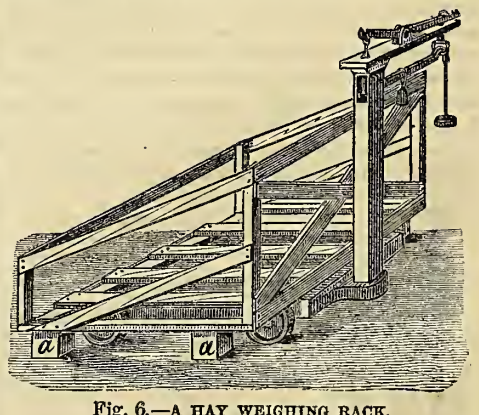


Fig. 6.—A HAY WEIGHING RACK.

peculiarities are dormant, or as they are usually called, *latent* characters. With this view, a living being is a wonderfully complex bundle of tendencies and counter-tendencies; swaying and balancing between the contending forces of *heredity*, or the inclination to be like the immediate parent, and *atavism*, or *reversion*, the clinging to old traits, which, if left to act alone, would sooner or later take all forms of life back to the original ancient types.

The Villager's Pig.—How To Keep It.

A large number of our village subscribers keep a cow, and one or more pigs, just to save the waste from the table, and to help in the support of the family. Both are important sources of income when properly managed. The inevitable waste from the kitchen in an ordinary American family amounts to a good deal in the course of a year. It may as well be turned into pork, sausages, head-cheese, spare ribs, and lard, as to be thrown away. A neighbor, who has a vegetable garden, and studies thrift, has just slaughtered two pigs, weighing 598 lbs, and worth $35.88 at the market price. The manure made from them is worth ten dollars at least. Two small pigs were put into the pen April 6th, and came out well fattened November 21st, about seven months and a half. The food consumed consisted mainly of sour, and buttermilk, kitchen waste, small potatoes, cabbage, turnips, sweet corn, wind-fall apples, and other wastes from the garden. To this was added enough Indian meal to keep them constantly full fed from spring to fall. A good pen is an important item in feeding pigs. The sleeping apartment should be dry, and be kept well littered with straw, leaves, or sea-weed. From one-half to two-thirds of a pig's life is to be spent in sleep, if it is well treated. Give the pig the materials, and he will make a nice bed and keep it clean. The remainder of the stye is of less importance. There should be room enough to compost the manure, liquid and solid, with garden soil, corn stalks, weeds, and other refuse matter. The pig is unrivalled as a manufacturer of compost. Its good effects will be seen in all parts of the garden, where it is spread the following season. Regularity of feeding, three times a day, is one of the secrets of success. This may be at your own meal times, if your wife is a good house-keeper and keeps a clock in the kitchen. Good digestion depends upon regular meal hours for man and beast. There is then very little temptation to over eating, no cloying, and no spells of refusing food. A pig should never lose a meal after he is put into the pen, and should never be hungry enough to squeal. It requires some judgment in equalizing the rations, as well as in regulating their time. Much less of Indian meal is required for a ration, than of cooked potatoes, and less of potatoes than of kitchen waste. If anything is left in the feed trough, the ration has been a little too large, or not quite good enough. A pig should have all he can eat up and digest. A variety of food should also receive attention. The raw vegetables and fruits from the garden are excellent appetizers, and enables the pig to consume more meal. The meal may be mixed with cold or boiling water, with milk, or boiled fruits and vegetables, as suits convenience. It may be varied with unground corn, buckwheat, or a mixture of ground grains. The time spent in caring for a pig usually comes at meal hours, and may be balanced by what we learn in the school of economy. There is perhaps no animal that will exhibit more satisfaction, and give greater returns for good care and feeding, than a pig; and on the other hand a hungry one without a warm home—one that has not had a proper bringing up—can make itself exceedingly disagreeable, both as to general appearance and the noise that it will produce; besides, such an animal is without profit. As a rule, it pays the villager to raise his own pork, and it pays him the greatest profit when he takes the best care of his pig. C.

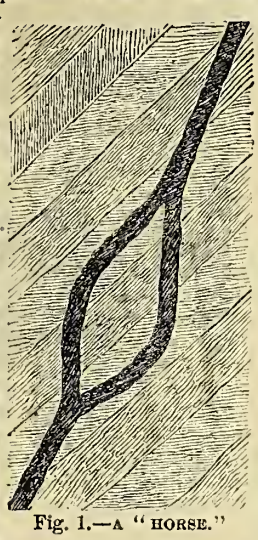


Fig. 1.—A "HORSE."

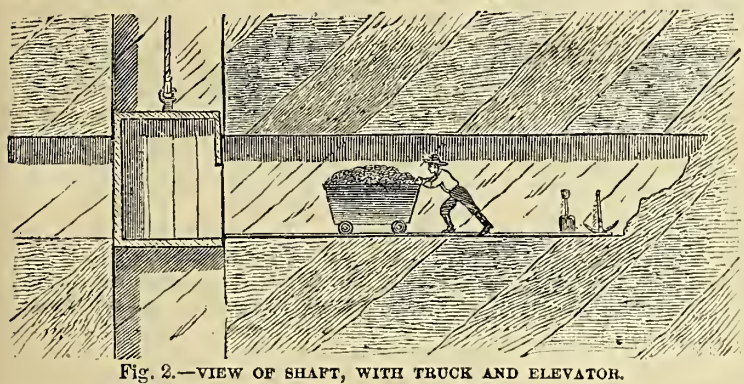


Fig. 2.—VIEW OF SHAFT, WITH TRUCK AND ELEVATOR.

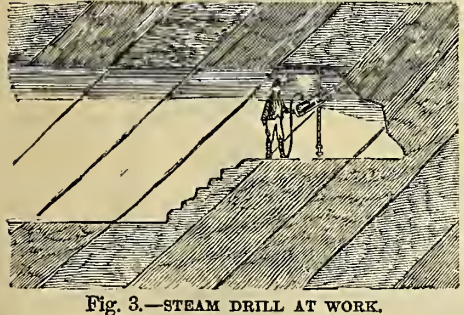


Fig. 3.—STEAM DRILL AT WORK.

Mines and Mining Terms.

It will be remembered that in the January number the various mining terms, *bed*, *vein*, *float*, *winze*, etc., were explained, and we closed with the miners at work. Sometimes there is found in a vein where it is greatly enlarged, a large mass of barren rock containing no valuable mineral and of a kind different from that of the vein; this is known as a *horse*, shown in figure 1, where the vein matter is seen at each side of the enclosed mass or "horse." To meet with a horse in a large vein is a great disappointment, and it often occasions an enormous increase in the cost of working the vein. In large mines a "cage" is used, which is precisely similar in its construction and working to the elevators used in large buildings in the cities; one of these is shown at figure 2, in the shaft, and a truck loaded with one from a level is being pushed by a miner to the cage to be taken up. Levels are often driven in two parts, so that more men may be employed and the work hastened. The manner of doing this is shown at figure 3, where a steam drill is seen at work in the upper part of the level. One of these steam drills is shown in detail in figure 4; a drill of this kind will do the work of a hundred men with hammers, and is able to make 1,000 or even 2,000 strokes in a minute. The diamond drill does not strike the rock, but turns round very rapidly, and consists of a hollow bar of steel like a tube, with black diamonds set in the edge. As this is turned it cuts a channel like an O in the rock, leaving a "core," which is broken off, and gives a sample of the kind of rock being bored. This kind of drill is used for exploring, and holes are often made and "cores" taken out for as much as 70 or more feet ahead of the open working, thus showing for that distance the exact character of the work to be done and the character of the ore to be taken out. In exploring the body of a horse, a drill of this kind may save much time and great expense, avoiding much unprofitable work. When the ore is raised to the surface it is crushed in a stamp mill. A 10-stamp mill is shown at figure 5. This consists of heavy masses of chilled cast iron, at the ends of long rods. The rods are set in a frame, and have catches upon them. A shaft, turned by the pulley, has cams upon it, which engage with the catches on the rods. These cams lift the rods and stamp heads, and then release them, when the stamps fall with great force upon chilled iron blocks under them, in a trough or box, crushing the ore that is thrown into the trough, into fine powder. The crushed ore, if silver, is taken to the smelting furnace, but if gold, is amalgamated with mercury, and is thus separated from the rock or any base metal which may be mixed with it. The gold is freed from the mercury and melted into bars, and the silver is cast into blocks called "bricks," fig. 6, of which great piles have been seen heaped up on the pavements in front of express offices in the mining towns. The gold and silver thus obtained is partly sent to the mints to be coined into money, and more or less is worked up into jewelry, and ornaments of various kinds, of watches, chains, spoons, forks, plate, and numerous other articles of use; some gold and silver are used in photography, and some in medicine; in fact, the uses of these "precious" metals, so-called because they do not rust or waste by oxidation, are much more numerous than is generally supposed.

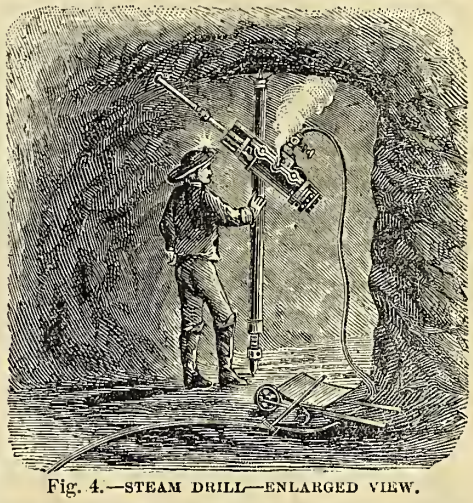


Fig. 4.—STEAM DRILL—ENLARGED VIEW.

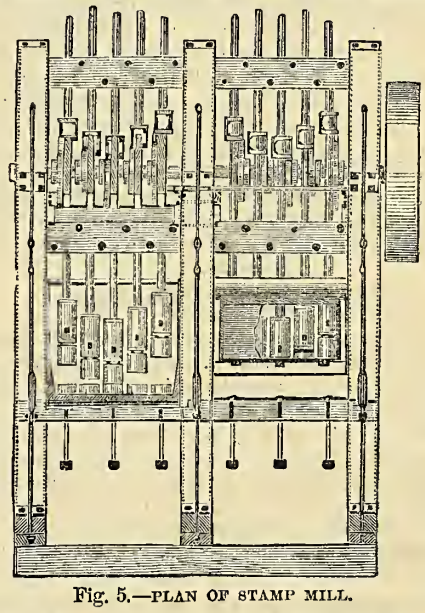


Fig. 5.—PLAN OF STAMP MILL.

Spreading Manure from the Cart Tail.—It is pretty well settled, that barn-yard manure, or the compost heap, can be spread at any season of the year, without much waste from evaporation. There is, however, a great chance for waste of labor, in the final disposition of the manure, whether we handle it once, twice, or thrice. The old style of farmer was wont to cart out part of his manure in the fall, to put it in large heaps upon the ground that was to be

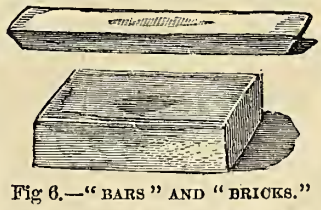


Fig 6.—"BARS" AND "BRICKS."

broken up for corn, in the spring. After the ground was plowed, and harrowed, and the rows marked, the large heaps were distributed in small piles, by the cart, and then were dropped by the hod, or basket, in the hill. This made three handlings of the manure before the crops could use it, and added very largely to the cost of the fertilizers. Whether we use manure as a top-dressing, or for cultivated crops, it makes a large saving to handle it but once. For top-dressing grass lands, it is clear enough, that manure is most evenly, and economically, distributed from the cart tail. So far as hoed crops are concerned, and the oats, and grass, that follow, it is probably better that the manure should be spread broadcast than that it should be dropped in the hill. The saving of the two handlings of the manure is clear gain. It is the common practice in some districts to spread fertilizers late in the summer or fall upon the sod that is to be broken up for hoed crops the next season. They claim that the manure is more equally distributed, and that by increasing the growth of grass the sod is made richer, and better crops are secured the following season. We need to carefully study the shortest and best methods of getting the fertilizers into the soil where they can do their work.

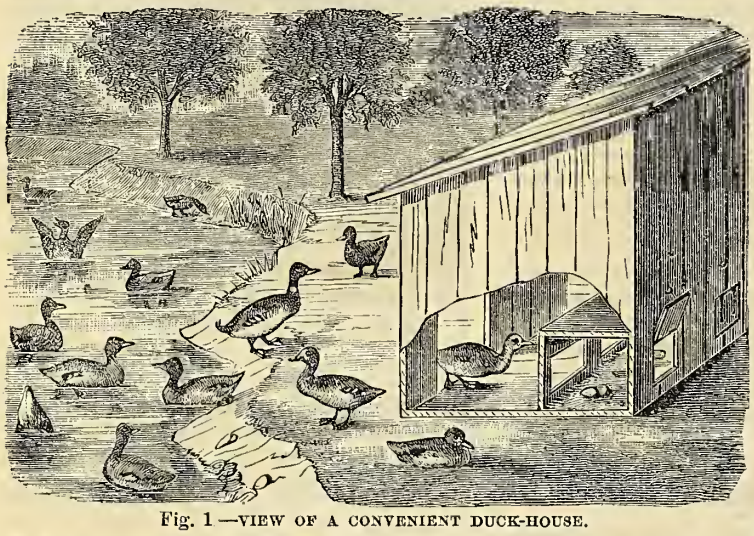


Fig. 1.—VIEW OF A CONVENIENT DUCK-HOUSE.

Will it Pay to Raise Ducks?

Two years' experience with a flock of Pekin ducks has convinced the writer that there is a satisfactory profit in raising these birds. But the conditions must be favorable, and these include a water-run, either a stream or pond, in which the ducks can gather food, and a house conveniently arranged for securing the eggs. The first year a beginning was made with a trio of the birds, and these were conveniently accommodated in an ornamental rock-work house among some evergreens on a side lawn. A neighboring stream of water

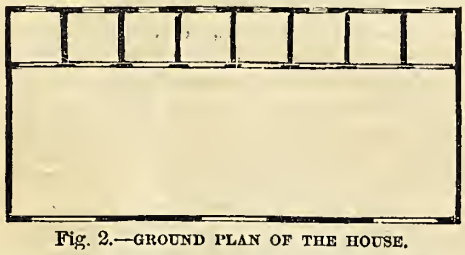


Fig. 2.—GROUND PLAN OF THE HOUSE.

kept the ducks out of mischief in the day-time, and they came home regularly at night; they were not let out in the morning until the eggs had been secured. The two ducks laid 202 eggs the first season; of these, some were sold, some eaten, and the remainder set under hens. "Bad luck," in which may be included the destruction of three-fourths of the eggs when under the hens, and the killing of several of the sitters by a stroke of lightning, which went through the poultry-house, reduced the produce of young ducks to between 30 and 40. But one of these died after leaving the nests, which goes to prove the hardiness of this variety. The young ducks thrived well, and when six to eight months old weighed five to six pounds on the average. A large portion were killed and eaten; the flesh was found to be remarkably juicy and tender. The retail market price of such ducks was about 25 cents a pound, so that each would be worth at least $1.25. The second year it was necessary to provide larger accommodations, and a house was made for them on the bank of a pond adjoining a brook in which there are abundance of water-cresses and other food, both vegetable and animal. The water-cress is eaten with avidity by ducks, and has myriads of snails and other water animals upon it. A plan of this house is shown at figures 1 and 2. For 50 to 100 ducks it should be 30 feet long, 12 feet wide, and from 4 feet high at the front to 6 or 8 feet in the rear. Entrance doors are made in the front, which should have a few small windows. At the rear are the nests; these are boxes open at the front. Behind each nest is a small door through which the eggs may be taken. It is necessary to keep the ducks shut up in the morning until they have laid their eggs, and a strip of wire netting will be required to enclose a narrow yard in front of the house. Twine netting should not be used, as the ducks put their heads through the meshes and twist the twine about their necks, often so effectively as to strangle themselves. To avoid all danger, the wire fence should have a 3 or 4-inch mesh. The Pekin ducks are prolific layers; a fair yearly product for a duck in its second year is 120 eggs, and 60 to 80 for a yearling. Their feathers are of the best quality, white, with a creamy shade, and 5 ducks weighing 5 pounds each, have yielded, killed in the winter-time when fully feathered, more than one pound in all. It will be right to pick the ducks when moulting is beginning; the feathers are then loose and are picked easily, and without injury. This will considerably increase the yield of feathers, and will prevent a useless loss; otherwise the loose feathers from 20 ducks will be found spread over their whole range.

Separating Cream by Centrifugal Force.

The Swedes have long been known as most expert dairymen, and for many years past those of the craft in other countries, have been borrowing ideas and practices from them. Our cold setting of milk for cream is an old Swedish practice, and the deep cans now in use, were originally Swedish, and some of our newer churns have a similar origin. A most important innovation, and, perhaps, a grand improvement in dairying, which has been recently introduced into this country, is the invention of a Swede. It is known as the "Centrifugal Creamer," and is intended to remove the cream by mechanical means—centrifugal force, in fact—to take the cream from the new milk, and thus avoid the necessity of setting the milk at all, whether in pans or in deep cans, with all the trouble, time, and cost, incident to that so far necessary and risky process. Here with we give engravings of this new dairy machine, which promises to make a revolution in our dairy practice. It was first exhibited at the great English dairy fair, at Kilburn, where it obtained a silver medal, and at Haarlem the Agricultural Society awarded it a silver-gilt medal. Its inventor claims for it the following advantages The cream can be separated from the milk as soon as it is drawn from the cow and aired; the use of ice is unnecessary; there is no setting of milk for the cream to rise; *all the cream* is taken from the milk, and the production of butter is consequently increased; the skimmed milk is perfectly fresh, and may be used at once for any desired purpose, with out loss of sweetness; the quality of the butter is improved, as the cream is separated in a perfectly pure condition; the process is easy and simple; the machine is easily cleaned; lastly, the separation of cream may go on continuously so long as fresh milk is poured in and the skimmed drawn out. The operation depends upon the principle, that in a rapidly revolving vessel, the heavier contents are forced, by the action of their weight, to the outside, while the lighter gather in the center. The work

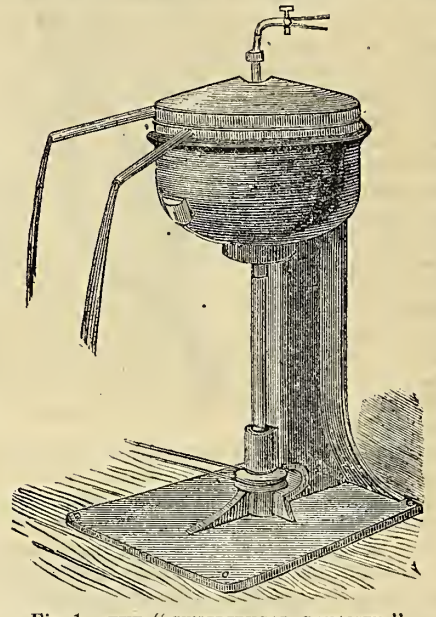


Fig. 1.—THE "CENTRIFUGAL CREAMER."

is done as follows: The receiver, which is made of steel, and is supported by a vertical axis turned by a pulley 6,000 in a minute, is filled with milk, by means of a funnel, which passes into the chamber, through the central column, *a*, fig 2 The rapid rotary action immediately begins to separate the heavy milk from the light cream, and in a short time the outer layers of milk are completely separated. As the fresh milk is poured in, this separated milk is forced by it into the tube, *b*, and arrives through it into the chamber, *B*, from which it escapes by a pipe. The cream in the center being continually augmented by the process of separation is raised by the entering milk into the tube, *c*, and passing by the tube, *f*, into the chamber, *C*, escapes by another pipe into proper receptacles; thus the process continues, so long as any milk is introduced. It should follow that as water is heavier than the cream, if a quantity of it should be introduced when the milk is all in, the cream remaining may be separated to the last drop, until the milk, too, is

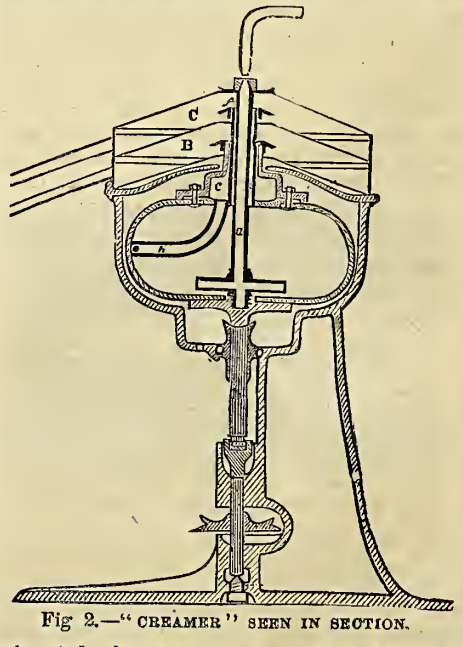


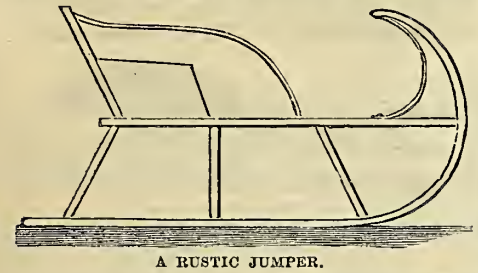
Fig 2.—"CREAMER" SEEN IN SECTION.

exhausted, when a stream of water passed through for a time, would cleanse the machine perfectly.

This conclusion, however, is our own, and we do not know that it is so claimed by the inventor, but it is a poor principle that will not work out its own theory as well with one liquid as with another. If the machine will separate one composite liquid into its heavier and lighter parts, it should certainly separate another, and this machine should be expected to remove cream from water as well as from milk.

Making a Jumper.

A "Jumper" is a light, one-horse sleigh, made to carry passengers, or a light load. It may be made of hickory or oak poles, dressed into shape, and a few bolts; or the joints may be mortised into tenons in the usual manner. A rustic jumper made of timber with the bark on, is a very appropriate rural conveyance, and would answer many common purposes. To make a neat and strong one, proceed as follows: Choose two hickory poles 4 inches thick, and dress them sufficiently, steam the smaller ends, by wrapping bagging around them, and soaking them in boiling water. When they are flexible, bend them into the desired shape, and fasten them with cords until they are set, and will retain the bend. These are the runners. The posts are mortised into these runners, and into the benches in the usual manner, and the sides are connected by cross-benches bolted with carriage bolts, or mortised, and are braced sufficiently to make the frame stiff. The floor is laid upon the benches, and the body and seat are built upon it. The front



A RUSTIC JUMPER.

is closed in with basswood, or other boards, steeped in hot water, until made to bend into the proper shape. The shafts are fitted to eyes put through the front part of the runners in the ordinary way. The runners should be shaved off smoothly on the bottom, to make them slip easily.

Barn and Barn-Yard Rakes and Brooms.

In cleaning barns and barn-yards, very stout rakes and brooms are needed. Some farmers, and even dairymen, never think it necessary to do more towards cleaning their barns than to fork out the litter, leaving the floors still covered with small particles of filth. It is now considered by the best dairymen, and very rightly so too, that perfect cleanliness in barns is absolutely necessary to the production of pure, clean milk and good butter; and cleanliness certainly includes clean floors. To preserve this cleanliness, every barn should be provided with a strong rake and a stiff broom. A rake which will be found useful, and that can be made at home, is shown at figure 1. It is made of a head block in which some curved teeth are inserted, and to which a convenient handle is fitted. This will be found to gather the manure better than one with straight teeth. A broom may be made of birch twigs placed between flat pieces of board, as

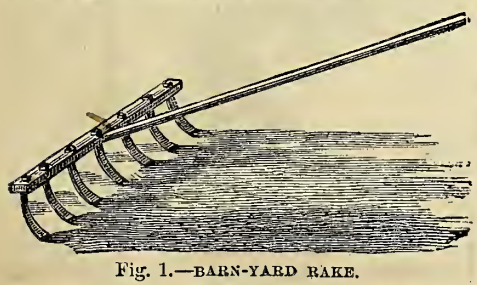


Fig. 1.—BARN-YARD RAKE.

shown at figure 2; the pieces being bound together firmly with twine, or preferably, with wire. A handle is fitted in such a position as to easily push the broom in sweeping; it may also be drawn forward like a rake. A useful broom is made of rattan, which is very durable for farm use, and can be obtained at most well stocked implement stores.

The Precocity of the Jerseys.

Col. David Taggart, of Northumberland, Pa., President of the Penn. Agricultural Society, at that Society's remarkably successful exhibition last fall made some statements of his experience with Jersey cattle. At the request of several of our readers who heard him, he has written out the essential

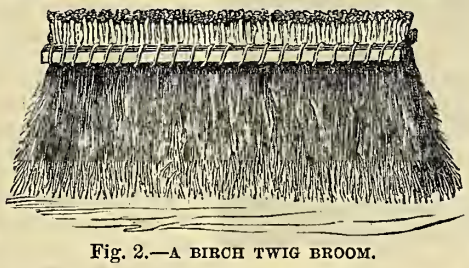


Fig. 2.—A BIRCH TWIG BROOM.

points of his remarks for publication in the *American Agriculturist*. Colonel Taggart writes:

Twenty-eight years ago, in company with three other aspiring farmers' boys, I visited the great "York State" Fair at Rochester. Here we found nearly two hundred magnificent Shorthorns, scores of fine Devons and Herefords, and *four* little Jerseys. I said to one of my fellows, that "if I was ever fixed for keeping a herd, that the Jerseys were my sort."—I have owned one or more Jerseys for the last sixteen years, but only since 1873 could I give them my personal attention. I have now nine cows in my little herd, and I propose to give you their achievements in calf-dropping. I reared all but the oldest two. "Ruby," dropped March 2, 1872, had her first calf June 3, 1873; her second, May 15, 1874; third, March 29, 1875; fourth, (Bessie), Feb. 1, 1876; fifth, January 2, 1877; sixth, (Mary), Nov. 12, 1877; seventh, Oct. 5, 1878; *eighth*, Aug. 27, 1879. Whereas, you will perceive, she was not quite 7½ years old. At the same rate when she has had a calf and a half more, she will have gained a whole year. She is a large, full-barrelled, and hardy cow, in spite of her early and rapid breeding.

"Nelly," dropped April 7, 1873; calved June 10, 1874; July 27, 1875; July 9, 1876 (Annie); June 27, 1877; April 27, 1878; March 31, 1879; or six calves before she was 6 years old...."Bessie," Feb. 1, 1876; 1st calf (Sally) July 8, 1877; 2d, May 7, 1878; 3d, March 4, 1879. Three heifer calves in 19 months and 26 days—and she only 3 years, 1 month, and 3

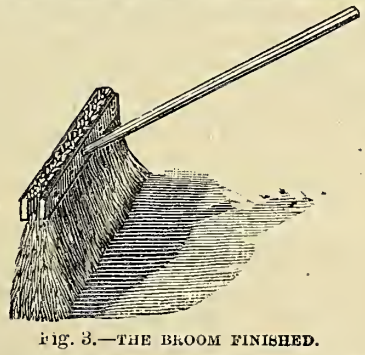


Fig. 3.—THE BROOM FINISHED.

days old...."Annie," July 9, 1876; 1st calf (Susie), Dec. 25, 1877; 2d, Oct. 25, 1878; 3d, Oct. 8, 1879. Three heifer calves again...."Fanny," July 2, 1876; calved March 28, 1878, and May 20, 1879. This animal, bred in-and-in, having three-fourths of the blood of her sire, has not done so well...."Jennie," January 18, 1877, aborted at about 7 months, Sept. 23, 1878; 2d calf, Aug. 8, 1879. She is now as well developed in barrel and bag as a four-year-old...."Sally," July 8, 1877; calved Feb. 16, 1879. This made "Bessie" a *grandmother* at 3 years and 15 days...."Mary," Nov. 12, 1877; calved May 11, 1879...."Susie," Dec. 25, 1877; calved May 22, 1879—one month and 18 days before "Annie," *her* mother, was three years old...."Hannah," out of imported "Antic," sold to the Hon. John B. Packer, was only 14 months and 20 days old when she dropped "Fanny," and her half sister, "Lillie," was a mother at 14 months, 23 days. To recapitulate:

Nelly	was a mother at	14	months and	3	days.
Hannah	" "	14	"	20	"
Lillie	" "	14	"	23	"
Ruby	" "	15	"	1	"
Susie	" "	16	"	27	"
Bessie	" "	17	"	7	"
Annie	" "	17	"	16	"
Mary	" "	17	"	29	"
Sally	" "	19	"	8	"
Fanny	" "	20	"	26	"

Jennie had had a calf and seven-ninths when 2 years, 6 months, and 20 days old. None of these young animals raised by myself have thus far gone dry. They freshen up from 2 to 4 weeks before calving, and attain almost their full quantity. If any one asserts that this early breeding is hurtful, let him come and see for himself. Mr. Packer thought "Hannah" was *too big*, and if any one has a finer 3-year-old than "Bessie" and "Annie," or a bigger 2½-yearling than "Jennie," or more thrifty *milking calves* than "Mary" and "Susie," I will go far to see them. It is logical to believe that the sooner a cow or other animal can acquire a good habit, the better it will be for them. And surely it is a good habit for *cows* to drop valuable calves and give milk. If I can render mine, not merely self-supporting, but profitable, at 15 or 18 months, by keeping the right breed and feeding liberally, I am more fortunate than he who produces the same result in 30 or 36 months, by half-feeding. The half-feeding for the longer period will cost much more, both in money and labor, than the full feeding for the shorter time, and produce animals of less sym-

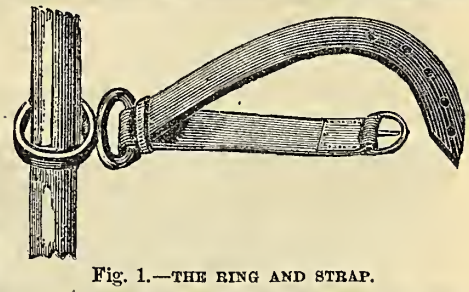


Fig. 1.—THE RING AND STRAP.

metry and vigor. As a rule, the finest *physical* specimens of dogs, hogs, cattle, horses, jackasses, and men, and not stunted in their development, are those that have never felt the pinchings of poverty.

Ring and Swivel Cattle Fastening.

Mr. D. S. Depue, Ionia, Mich., sends a method of fastening cattle, of his own devising, which he has used for a long time, and finds very satisfactory, preferring it to any other. The fastening consists of an iron ring, four inches in diameter, and about an inch in width, which slides readily upon an upright post. A swivel-ring turns in the large ring, being fastened to it by a swivel-point passing through a hole in one side of the large one, and headed down over a washer in the usual way. The small ring carries the strap, which, for strength and comfort, should be rather wide and of sufficient length to buckle around the animal's neck, and no more. In order to keep the strap in place, a piece of wire may be placed around the fold of the strap, near the ring, as shown in figure 1. When the fastening is not in use, it can be pushed up to the top of the post, and the strap passed over a peg in the timber overhead, as shown in figure 2.—"The swivel is the climax of all." Mr. D. is satisfied that his cattle, thus fastened, are comfortable, and safe, and the method is easy of application.

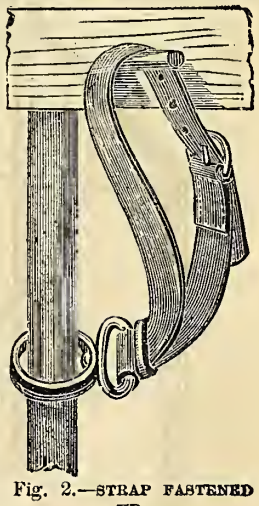


Fig. 2.—STRAP FASTENED UP.

Cattle Shelters on the Prairies

In the far western grazing regions, where natural protection of ravines, groves of timber, etc., is not

Fig. 2.—CATTLE SHELTER FOR THE PRAIRIE.

available, shelters of the kind shown in the annexed illustrations are provided. Poles are set in the ground in rows about 16 feet apart, and 12 feet in the rows. Cross-beams or poles are spiked to these to hold a frame of lighter poles, and others, placed sloping, are laid upon the north side as shown at figure 2. Piles of hay are heaped over these frames, as seen at figure 1, and these furnish at the same time, shelter from storms, and feed for the protected animals. A large number of these shelters are often made on the range, and some of them are hundreds of feet in length, and so curved as to protect from north-west and east winds. After a severe storm, the shelters are fixed up by packing more hay on the sloping poles, to furnish feed for the cattle when the next storm renders the shelters acceptable both for food and protection.

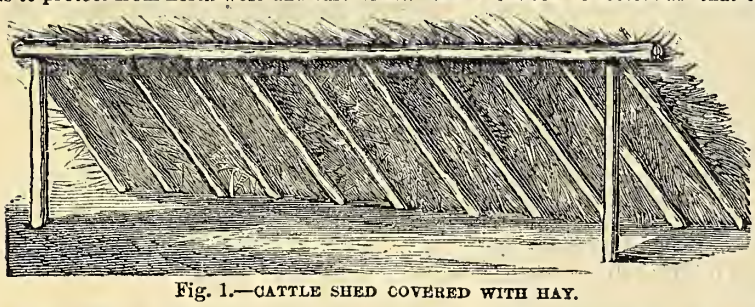
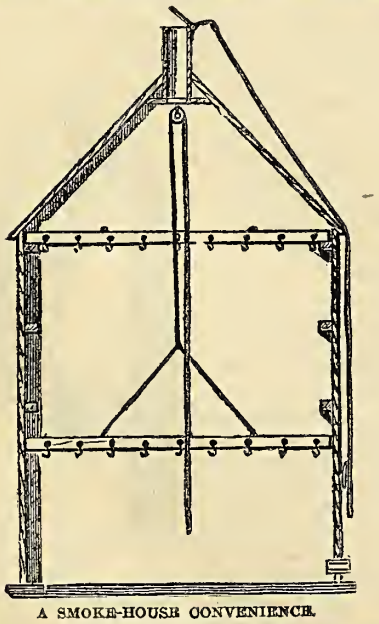


Fig. 1.—CATTLE SHED COVERED WITH HAY.

A Smoke-House Convenience.

A method of hanging the meat in a smoke house



A SMOKE-HOUSE CONVENIENCE.

without the necessity for reaching up, or using a ladder, is shown in the accompanying engraving. The smoke house may be of any shape, but it should be provided with cleats fixed to the sides, upon which the hanging-bars rest. A pulley is fitted inside to the top of the building, and a hoisting rope is passed over it. The hanging-bar is hooked to the rope and two spreading ties, as shown, so that it will not tip easily when it is loaded. The hams or bacon are hung upon hooks fixed in the hanging-bar, and the whole is hoisted up to the cleats, when the bar is swung around so that the ends rest upon the cleats; the rope is then released from the bar by means of a small rod, and another bar may be loaded and raised in the same way, and so on until the meat is all suspended.

Top-Dressing in Winter.

The practice of top-dressing grass land during the fall and winter months, is slowly increasing. The common apprehension, that much of the manure is wasted by running off while the ground is frozen, is giving place to better views. There never was much basis for this opinion. The same soft weather or rain that makes surface water, opens the soil to receive all that leaches away from the manure. The surface soil of dark mould, six inches or more in depth, has an easy task to take care of a heavy dressing of stable manure. If fifty loads were to be spread evenly over an acre, it would make less than a half inch in depth. The grass stubble, even upon a gentle slope, would hold the manure in place, in all ordinary rains and snows. Experiments show conclusively, that the fertilizing properties of the manure remain where it is spread. The change which our railroads and steamers have made in Eastern agriculture, is turning the attention of farmers more and more to top-dressing, as a means of keeping up the fertility of their meadows without plowing, and re-stocking the land. There is so much competition from the new states in grain and meats, that the eastern farmers can only raise them at a very small profit, or even loss. Grass pays better than almost any other crop. This he can turn into butter and milk for the village market, or into hay, which is too bulky to admit of transportation from the prairie states. The old rotation of corn two years, oats one year, and grass three years, hardly pays in the Eastern States. Labor is expensive, and it costs to plow, cultivate, and re-stock land. Grass and hay are paying crops, and if the meadows can be kept up to the production of two or three tons to the acre, by top-dressing with barn-yard manure, it is improved husbandry to adopt the change. It is demonstrated in a multitude of cases, that this can be done. We visited, recently, a farm on which were meadows, that had not been plowed since they were first cleared from the forest, some two hundred years ago. They were not far from the barn-yard, and produced the best hay upon the farm. Any falling off in the production, indicated the need of more top-dressing, which was faithfully applied. The season favors this mode of fertilizing, and there is economy in handling the manure but once. The teams are in their best condition during the fall and winter, the weather is cool, and much power is saved by drawing the loaded carts over the solid earth, or the sleds on the snow. Much labor is saved by spreading the manure from the cart tail, while drawing it upon the meadows. The great pressure which comes upon the farm hands and the teams in April and May, is forestalled by this winter work. About the best place for manure, as it comes from the stable or the compost heap, is the surface of the meadow. CONNECTICUT.

A Dumping Sled.

A sled for drawing manure, stone, or other coarse materials, from which the contents can be instantly

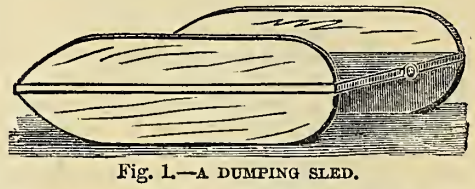


Fig. 1.—A DUMPING SLED.

dumped, such as is shown in the engravings, will often be found a very convenient farm vehicle. It consists of stout runners, upon which the plank deck is fastened, and a pair of inverted runners are fastened to the upper side (fig. 1.) These operate as side planks and runners at the same time. The sled is drawn by a stout chain and ring fixed to the front. A longer chain is fastened to the back of the sled, as shown in the engraving. The draft-chain is fastened to a snap-hook, which may be released by pulling the cord, as shown at figure 2. Then the dumping-chain comes into use, and tips the sled over, releasing the load. The ring is then attached

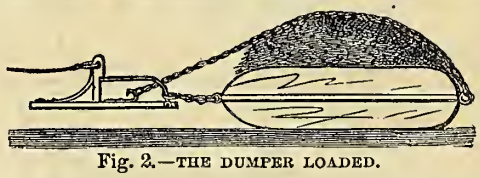


Fig. 2.—THE DUMPER LOADED.

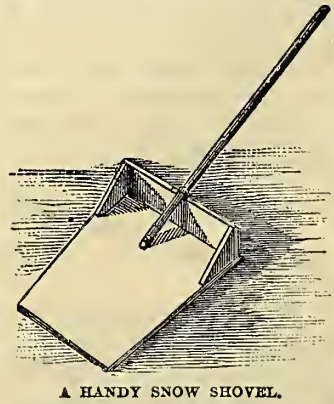
to the draft-hook; the dumping chain, fixed as before, and the sled is ready for re-loading; this time upon the reversed side. It is in fact two sleds in one, and by rounding the runners, front and rear, it may be drawn equally well from either end.

How to Make a Snow Shovel.

Every house should be provided with a snow shovel, ready for use at times that always come unexpectedly. A broad wooden shovel will be of more

Fig. 3.—THE CHAIN FASTENING.

use in moving snow from paths and roads than a steel one, and it may be made very easily, as shown in the illustration. A broad piece of thin board is chosen, and a cross-cleat and braces are nailed to it. The handle is fitted, and the edge of the shovel is protected by a piece of sheet-iron or tin nailed over it. If the board is likely to split, a light cleat may be fastened across it on the underside with wrought nails, clinched to make them hold firmly. The engraving hardly requires explanation. There are but few farms upon which a snow plow will not pay for the trouble of making it at the first heavy fall of snow—to say nothing of the fun it affords the youngsters. After all the work of the plow is done, the "finishing touches" require the snow shovel.



A HANDY SNOW SHOVEL.

Double White-Flowered Horse Chestnut.

BY W. C. BARRY, MT. HOPE NURSERIES, ROCHESTER, N. Y.

Although the Double-flowered Horse Chestnut was introduced to this country in 1852, this superb variety has not acquired that popularity which its merits warrant. It is surprising that so important an addition to our hardy flowering trees should not have met with greater favor, and I can only account for this lack of appreciation by the fact that its many good qualities have not been understood. It was figured and described the first time in America, in the "Genesee Farmer" for 1852. Since that time it has been propagated and disseminated in but limited numbers, and, as yet, fine specimen trees are seldom seen. The first imported tree, obtained from the late Mr. Rivers, is now growing on the grounds of Ellwanger & Barry, at Rochester, and is about 60 feet high, its branches covering a circle 20 feet in diameter. It is as hardy as the common Horse Chestnut, of vigorous, erect growth, regular pyramidal outline, with rich, dense foliage and splendid inflorescence. Few trees can lay claim to a greater combination of attractive features, and it possesses several characteristics which render it even more desirable for ornamental planting than the ordinary form. In habit it is more upright and formal, its hight being about three times its breadth, and a fully developed specimen is a perfect pyramid of verdure. Its flowers, as seen in the engraving, which is one-fifth the real size, are perfectly double, and in spikes larger than those of the single flowering kind, resembling gigantic hyacinth bouquets. They appear in remarkable profusion at the season of bloom, which is about two weeks later than that of the common kind. On the lawn this tree forms a conspicuous and pleasing object, and although I have never seen it used as a street tree, I think it admirably adapted to the purpose. It produces no fruit, a characteristic which many will regard as an important point in its favor, as much litter is avoided. A proper consideration of the merits of this fine tree will induce amateurs and planters to employ it oftener in the ornamentation of public and private grounds.

THE DOUBLE WHITE-FLOWERED HORSE CHESTNUT.

THE HONEY LOCUST (*Gleditschia triacanthos*).

Dyehouse Cherry.—As we first brought this fruit to notice, it is gratifying to hear good accounts of it from all quarters. "R. J. B.," Fairfield Co., O., writes. "The freedom of this excellent fruit from insect depredations, is almost as much a marvel, as its great hardiness. Usually the fruits which "the worms" pass by, are not of a high grade, the Damson plum for example. But here is a fruit which yields to none of its compeers; and the concurrent testimony is, that year after year, it remains unhurt by insects, as well as by cold. An explanation of this is ventured with some diffidence. Most of the insect pests prefer seclusion for their work. Fruits borne in clusters, and touching each other afford them privacy. Rawle's Janet is a familiar example. This good apple sets its fruit in clusters of two, three, and four, and it is found profitable to thin it to one on a spur, not only for the increased size of the remaining apples, but to get rid of the insect injuries which otherwise render the crop of but little value. Now, with the Dyehouse, the leaves are but moderately plentiful, and the fruits stand out, each by itself, often in full sunshine, so that the green of the leaves is obscured by the brilliant red of the ripe cherries; and the little marauder, failing to find a quiet nook, takes his leave."

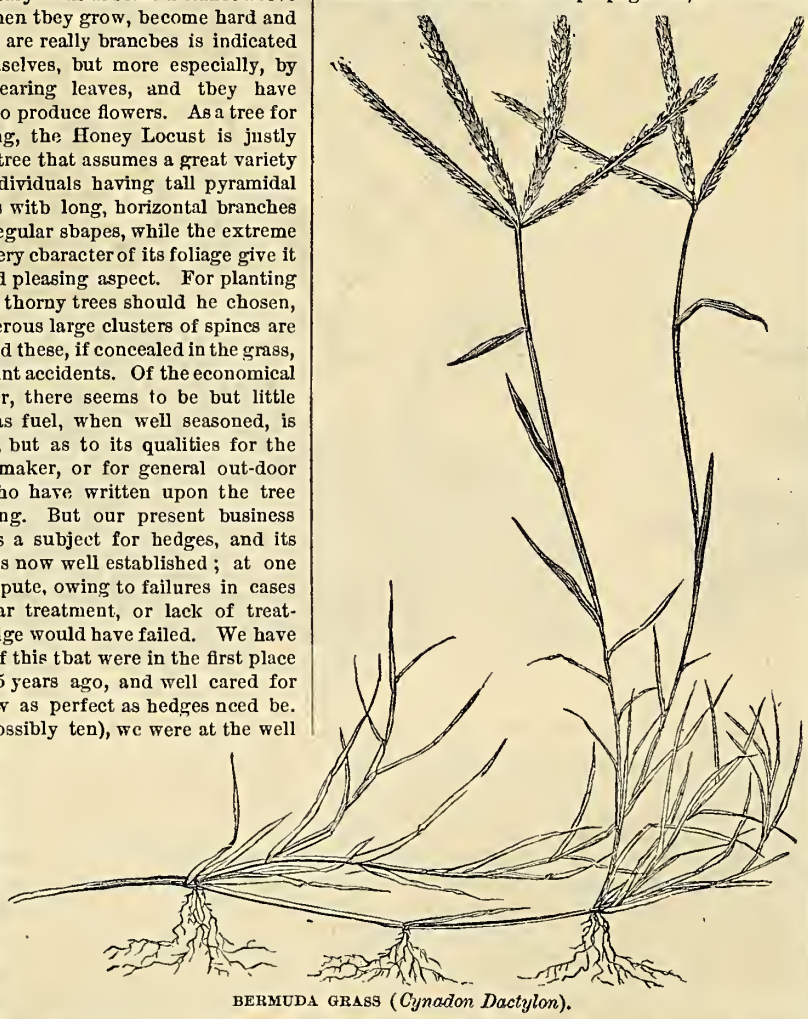
The Honey Locust as a Hedge Plant.

In localities where it will endure the winter unharmed, there is probably no plant so serviceable for hedges as the Osage Orange. But besides a northern area in which we know that this is not hardy, there is a broad belt in which its hardiness is doubtful, it varying with local influences. From both these districts, and especially that of the uncertain hardiness of the Osage Orange, there come frequent inquiries for some hedge plant which shall be as serviceable as that, and perfectly hardy. We know of no other so well meeting these conditions as the Honey Locust. Before considering its value as a hedge plant, it will be well to describe the Honey Locust, as we have found that it is very frequently confounded with the Common Locust; the fact that this is often called the "Sweet Locust" greatly aids in confounding the two. The Honey Locust is a native of the Middle, Western, and South-western States, it being more common west than east of the Alleghanies. Along the banks of the rivers it often reaches 80 and 100 feet in hight, with a trunk three and four feet in diameter. The broad head is remarkable for its lightness and grace, though it makes but little shade, owing to the fineness of the foliage. As the peculiar form of the leaves distinguishes it from nearly all other native trees, and especially from the Common Locust, we give in the engraving a small twig with several leaves. These are what botanists term *twice-pinnate*; simply *pinnate* leaves are very common. The Sumachs, the Ailanthus, the Common Locust, and many others, affording examples. In the pinnate leaf, there is a leaf-stalk, or common petiole, along the sides of which are arranged pairs of small leaves, or *leaflets*, with or without a terminal or odd one. In the twice-pinnate (*bipinnate*) leaf, the leaflets themselves are compound, the common, or main leaf-stalk, instead of leaflets, has smaller leaf stalks, which themselves bear leaflets. A reference to the engraving will show this. This difference in the foliage will usually allow the Common Locust and the Honey Locust to be distinguished at once; in the one case the leaves are simply pinnate, and in the other doubly, or twice-pinnate; though it sometimes happens that the Honey Locust bears some once-pinnate leaves, this is not the rule. The difference in the flowers is equally striking; the Locust proper has long hanging clusters of large, white, pea-shaped flowers, which are noticeable for their fragrance, and are very showy. The Honey Locust, on the other hand, has flowers so small and inconspicuous that only those who observe closely ever notice them at all. They have not the pea-shape of the flowers in most of the family (*Leguminosæ*) but are regular, in small spikes, which, being greenish, are likely to escape notice. The flowers are of the kind called *polygamous*, *i.e.*, there are staminate, pistillate, and perfect flowers, either in the same tree, or on different trees. On trees where the flowers are all staminate, as in figure 1 in the engraving, there will, of course, be no fruit. Nor will there be on trees with all pistillate flowers like 2, unless there are other trees with stamens near by to fertilize them; while trees with the perfect flowers (3 in the engraving) will produce fruit. In this tree the fruit is a much flattened pod, an inch, or more, wide, and 10 to 20 inches long. These are often curved and twisted, and very conspicuous upon the tree; Dr. Gray once aptly described the appearance of the tree in fruit by likening it to a tree hung with apple parings! The intervals in the pod between the seeds are filled with a sweet pulp, on account

of which the pods are eaten by many animals; boys try to "make believe" that it is good, but they soon tire of its mawkishness. An infusion of the pulp has sometimes been used for making a domestic beer. But the most noticeable feature of the tree, and the one in which its hedging value resides, is its thorns. The thorn often being triple, *i. e.*, a main thorn with two branches, has given the tree one of its common names—"Three-Thorned Acacia," its foliage having a close resemblance to that of the Acacias; but there is no regularity in the shape of the thorns, they being found in great variety, from a mere simple point to very much branched and complicated masses, armed in every direction. Different trees vary greatly in their armament, some being quite thornless, while others, according to Bryant, "bristle with thorns to such a degree, that not even a squirrel can ascend them." These thorns are really branches developed as spines; the tree produces, besides buds at the axils of the leaves, supernumerary buds at some distance above the axil; these, when they grow, become hard and pointed; that they are really branches is indicated by branching themselves, but more especially, by their sometimes bearing leaves, and they have even been known to produce flowers. As a tree for ornamental planting, the Honey Locust is justly esteemed; it is a tree that assumes a great variety of forms, some individuals having tall pyramidal heads, while others with long, horizontal branches assume flat and irregular shapes, while the extreme lightness and feathery character of its foliage give it a most graceful and pleasing aspect. For planting in grounds the less thorny trees should be chosen, as those with numerous large clusters of spines are apt to drop them, and these, if concealed in the grass, may cause unpleasant accidents. Of the economical value of the timber, there seems to be but little known; its value as fuel, when well seasoned, is generally admitted, but as to its qualities for the builder or cabinet maker, or for general out-door farm uses, those who have written upon the tree say little or nothing. But our present business with the tree is as a subject for hedges, and its value for this use is now well established; at one time it was in disrepute, owing to failures in cases where, under similar treatment, or lack of treatment, any other hedge would have failed. We have examined hedges of this that were in the first place properly planted 25 years ago, and well cared for since, that are now as perfect as hedges need be. Some years ago (possibly ten), we were at the well known nursery of Ellwanger & Barry; they had recently finished planting a long line of Honey Locust hedge upon their grounds. Having seen, as it were, the very beginning of this hedge, we have watched its progress with interest in subsequent visits to Rochester; not having time when there last summer to visit the hedge (at some distance from the attractive portion of the grounds), we have since written to learn its present condition, and the esteem in which it is held after an experience of several years. After giving answer to some questions in detail (which we shall use at another time), Mr. Barry writes: "Some neighboring farmers here have fine Honey Locust hedges on their farms, and they have never received more than ordinary care. For our climate it is the best hedge plant that I know of." After this nothing more need be said in regard to its excellence. Having given so much space to describing the plant, the method of making a hedge must be left for another month. We may here say, to answer a number of inquiries, that the plant is always raised from seeds planted in spring; these may be had of the leading seedsmen, the catalogue price being 60 cents a pound. Young trees are offered by several nurserymen, the usual price being $8 to $10 the thousand, according to size. We mention these points to save a large number the trouble of writing for the information.

About Bermuda-Grass.

Bermuda-Grass, or Scutch-Grass in our Southern States, Creeping Dog's-tooth-Grass in England, Chiendent in France, and Doob or Durva in the East Indies, are different common names for the grass called by botanists *Cynadon Dactylon*. In one respect it is the most remarkable grass within our knowledge, as one can with equal ease find that it is the most valuable of all grasses, and one that is to restore worn-out Southern fields, and bring untold blessings wherever introduced, or that on the other hand that it is a curse to the soil, and that when this once gets a footing upon a farm, the owner may as well give it up at once, as to do so at the end of a struggle in which he is sure to be worsted. With such widely differing views, it is likely that there is some truth on both sides; but it is not to our purpose at present to discuss the value of Bermuda so much as to describe the grass itself and its methods of propagation, in order to reply to many inquirers, who wish to make a trial of it. No doubt these have come to the conclusion that if half that has been said in its favor is true, they will run the risk of all the alleged bad qualities that have been ascribed to it. Bermuda-Grass has slender creeping stems which run along upon the ground, throwing clusters of roots into the soil at every joint, frequently branching, to form a net-work of such stems from which arise annually the erect and leaf-bearing stems. These prostrate stems run to a great distance; one writer states that they will pass over a rock six feet across, and soon hide it from view. The upright stems vary greatly with the quality of the soil; sometimes they are but a few inches high, forming a dense mat, and again growing tall enough to make two tons of hay to the acre at one cutting. The difference of appearance in the grass as it grows on dry and sandy soil, and in a moist and rich one, is so great that some botanists have thought that they might be well marked varieties if not distinct species. The flowers are borne upon slender *spikes* one to two inches long, three to five of which are attached at the top of the stem, from which they spread like rays, as in the engraving, taken from a small specimen. The structure of the *spikelets*, or the flowers themselves, we need not describe, as it can only be done by the use of terms familiar to only those who have made a special study of the grasses. While the Bermuda-Grass flowers freely, it has not, so far as we are aware, produced seed in this country. In reply to many who have inquired where seed could be procured, we have had occasion to state a number of times, that no seed was produced; this has called out letters from several who thought we were in error, and upon our requesting the writers to send us specimens, they have in nearly every case sent the seed of the Crab-Grass (*Panicum sanguinale*). That is, an annual, readily told from Bermuda-Grass by botanical characters, and can be known to the general observer by its much longer spikes which are usually in greater number (4 to 15) than in Bermuda. The few who did not send Crab-Grass seed, mistook the flowers of Bermuda for its seeds. But does it never bear seeds? Undoubtedly it is fruitful in some countries, indeed, Sinclair in the account of his experiments made for the Duke of Bedford and published in 1816, says: "The seeds of this highly celebrated grass in India, were communicated to the Duke of Bedford, from the East Indies, by the Marquess of Hastings." It is further stated, that the plants from these seeds produced seeds. This grass is found in all hot countries, but is thought to have been introduced here and into Australia, which could hardly have happened, save by the aid of seeds. Its wide dispersion with us, being found in Pennsylvania, and every State south of it, makes it probable that it has at times seeded, but in the hundreds of specimens we have examined, no seed, or even an imperfect one, has been found. In view of the inquiries we have had, we should think that some of our seedsmen would find it worth while to import seed from abroad. The only method by which it can now be propagated, is by cuttings. The sod is taken up and thoroughly washed; it is then run through a cutting machine, and cut fine; the cuttings (or rather choppings), are sown broad-cast, and a shallow furrow turned over them as in plowing in wheat. This method is suggested by Mr. Howard, in his useful treatise on "Grasses for the South;" we regret that he does not state what quantity of cuttings of this kind is needed for an acre. It would be well for some seedsman, where the grass is abundant, to advertise the fact that he can supply it in sods or cuttings. The grass increases very rapidly, and if those who wish to introduce it, can get by mail a small bunch of roots from some friend who lives where it grows, they can, by growing this carefully one year, get enough to set a wide area the following spring. The value of the Bermuda as a pasture grass, is more obvious than as a meadow grass. Yet when our late friend, Mr. Affleck, of Texas, states that his regular crop was five tons of hay to the acre, and one so favorably known as Doct. Ravenel, of S. Carolina, states that by the use of fertilizers, he harvested in four cuttings, from one-eighth of an acre, at the rate of *ten* tons to the acre, we should think that the Southern States by growing this grass would be exporters of hay.



BERMUDA GRASS (*Cynadon Dactylon*).

The Apple Leaf Fungus.

BY PROF. WM. A. BUCKOUT, PENN. STATE AGR. COLLEGE.

Professor Buckhout sends us some sketches of the Apple Leaf Fungus upon the fruit, with the following interesting notes: "In your article on the Apple Leaf Fungus in the November number, I find no mention of the fact that besides attacking the leaves, and thereby injuring the fruit-producing power of the tree, it attacks the fruit itself, as is known to be the case in certain wild species—the Hawthorn, for instance. An excellent example of this has recently come under my notice, and, as I am not aware that such a case has been recorded in print, I send you the details. Mr. Washington Campbell, of Linden Hall (Centre Co., Pa.), brought me the leaves and fruit of the apple locally known as the 'Pound' (Fallawater of Downing), upon both of which the "cluster-cups" were thickly scattered. Those upon the fruit were in patches about the size of a small coin, and most frequently found

about the eye. Sometimes, however, they were upon the side, and unconnected with either the eye or stem extremity. Figure 1 gives the appearance

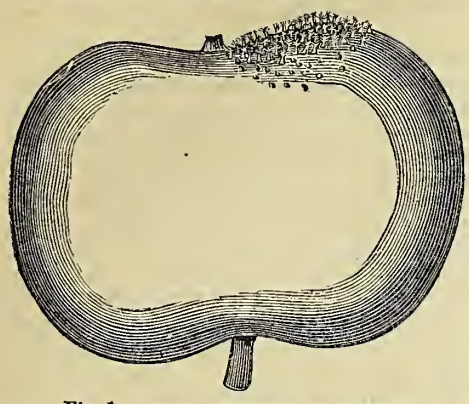


Fig. 1.—APPLE AFFECTED BY FUNGUS.

of one of the apples, and in figure 2 is shown the effect which was produced upon the interior of another. The flesh of the apple was somewhat discolored in places, and rather hard and knotty in lines running to the core. The fruit was thus un-

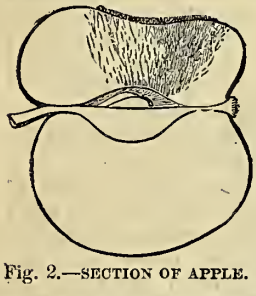


Fig. 2.—SECTION OF APPLE.

Fig. 3.

fitted for use, and when attacked became stunted and one-sided in its growth. Mr. Campbell's apple crop was very materially diminished by this means. Many of the 'cluster-cups' upon the fruit were longer and larger than those upon the leaves. This was very distinct to the unaided eye. In figure 3 I have sketched several of them enlarged. They are long, curving, and horn-like. Their recurved borders often fail to separate into the characteristic thread-like parts which are so distinct a mark of the shorter cups. A second point of great interest to fruit-growers is the connection of the 'cedar-apples' with these 'cluster-cups'—a point to which you refer by an example. I am glad to be able to add another, which is so conclusive that in my own mind there is no longer any doubt of the specific identity of the two forms which are apparently so different in their nature. The trees from which the specimens were taken were rather closely set, young and thrifty. Two red cedars were growing very near them. One was small, and upon it were found a half-dozen of 'cedar apples;' the other was a moderate sized tree, upon which were very many. Upon the apple trees nearest the cedars *scarcely an apple or a leaf* escaped infection. A few rods off was an older orchard, separated by a narrow roadway: only an occasional apple upon these trees showed the fungus. It appears as if the Pound apple was more susceptible to attack than other kinds; for one or two of other varieties, and apparently equally exposed, showed less of infested fruit. The case seems to be worthy of being placed on record, and to offer practical proof of the relationship of the two very unlike fungi—a point upon which botanists have long disagreed."

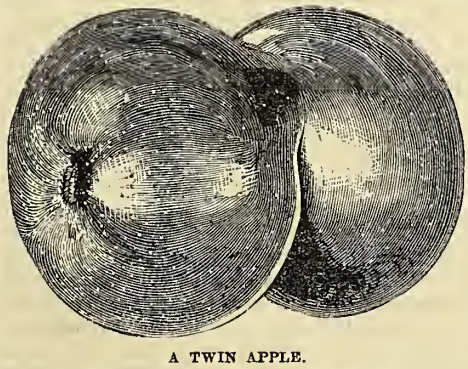
Rapid Tree Planting in Kansas.

[Professor Sargent, Director of the Arboretum at Harvard University, favors us with an extract from a letter written by Mr. Robert Douglas, the noted forest-tree grower, of Waukegan, Illinois. Mr. Douglas has recently completed a plantation of trees of the new hardy Catalpa (*Catalpa speciosa*), for one of the railroads of Eastern Kansas, and his method of planting, the result of years of practice and experience, will be of service to other prairie tree-planters, or indeed to any one elsewhere planting seedling forest trees on a large scale.—ED.]

"I wish you could have seen those raw men after we had worked them a few days. They boasted about planting 300 trees per man when they worked there last spring. When I told them that, after two days, I would make them average 1,500 trees per man, you should have seen the look they gave me. But they did it the second day, and kept it up to the end. The trees were as well planted as they possibly could be, the roots being carefully spread out by the fingers, and every tree planted firmly. Every one of those 18 or 24 men, averaging 10 hours per day, planted two and a half trees for every minute of that time! As this mode of planting is my own, arrived at after some study and experience, and reduced to the very fewest motions that can be used in planting a tree, or, rather, a plantation of trees, I trust that a description of the operation may be of interest. We call this the 'three-motion system' of planting. The land is marked off 4 by 4 feet, with a corn marker. The men are in 'gangs' of three each, two with spades and the other with 100 trees tied up neatly in a parcel with a willow. The spaders stand facing each other, taking each a row, the tree holder standing between them. The spader makes a downward stroke with the back of the spade facing outwards, and then takes out a spadeful of earth. This leaves a straight side on the back of the hole, against which No. 3 places the tree; the digger then replaces the spadeful of earth, having made just 3 motions of the spade. The tree holder takes a tree from his bundle, and with a quick motion, which is hard to describe, but easy to learn, places the tree in the hole in such a manner as to spread out the roots perfectly. In this way he tends two men, putting in the trees just as the spader raises the earth. As the spader steps forward to the next check made by the marker, he brings down the heel of his left foot close to the just planted tree, and this leaves it firmly tightened in the soil, and ready to grow."

Twin Apples.

In a "Basket Item" given last month on page 7, we mentioned the receipt of twin Lady apples from Mr. W. W. Young, of Ky. Thinking afterwards that the occurrence of such a union of apples was of sufficient interest to put on record with an engraving, we gave one of the specimens to an artist for the picture to be made. Singularly enough, when we opened the next parcel of our English



A TWIN APPLE.

papers, there in the "Journal of Horticulture" was, to all intents and purposes, our twin apple. The account of this English twin is of special interest, as it informs us that the tree which bore it has a regular habit of producing twins, and that it has been propagated. The apple is not, like ours, of a known variety, but is probably a chance seedling. Mr. Young stated, in sending the twin Lady apple, that he found a number of twins every year. We would suggest that he examine the coming season to ascertain if they do not all come from the same tree. Of course this growing together of apples is only of scientific interest; to the orchardist, other than a few specimens as curiosities, the habit of doubling the apples (instead of the crop) would be a disadvantage. It is useful for him to know that the peculiarity may be propagated, in order that such trees may be avoided in cutting cions.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Household Decorative Art.*

BY M. G. E.

The design for a Bracket in fret-work, here given in fig. 1, is to be worked up with a chisel and vein-

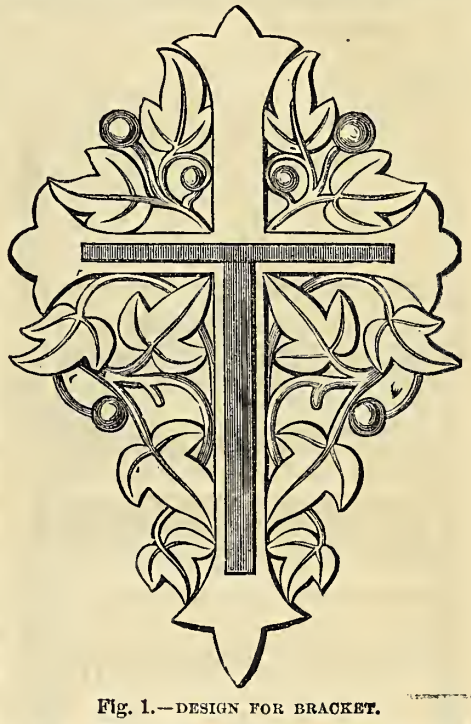


Fig. 1.—DESIGN FOR BRACKET.

ing tool. The shelf, shown in figure 2, is supported by a piece of carved wood, precisely like one-half of the lower part of the back, to which it must be firmly attached by means of small screws let in from behind. The wood should be ¾-inch oak or walnut. In drawing outlines for carving, chalk is better than pencil, as it is more readily erased, unless the pattern is delicate, as for fret-work, when a pencil line will be more easily followed. If the ornament is to be in high relief, draw the pattern boldly on the upper surface, and mark off by a line on the sides, the distance to which the first flower or leaf of the group is to be cut down. For straight lines, use the chisel, holding it upon the line, firmly in the left hand, and strike it a light blow with the mallet in the right; do not cut too deeply at once. A heavy blow is likely to break the fibre, and the piece that was intended to be left in relief will be weakened, and probably break off with a little handling. For curved lines use the gouges; if you have several sizes, one will be found to fit each curve; be careful to cut straight down, and do not let the tool slope; work slowly and carefully until the whole design is outlined. Then, with your chisels, clean away the back-ground, leaving the ornament in as high relief as desired; now sketch in the remaining leaves, treating them in the same way, clean out carefully underneath, and the work is now blocked out. Much patient labor is next wanted to perfect what is now but just begun. The veining of the leaves, the curving of the flowers, the rounding of the stems, and all the delicate tracery required must be accomplished by

Fig. 2.—THE SHELF.

the aid of the small chisel, gouges, veining, and parting tools. Cut cleanly and with thought; avoid the use of sand-paper if possible, design

* This was prepared and intended to follow an article given in June last, but was crowded out for the time.

carefully, and execute patiently, and as the work develops, you will very soon be proud of the result.

Figure 3 illustrates a hanging book-case, in the old English style, which must be strongly put together to bear the weight of books. While endeavoring to secure the ornamental, the useful should not be lost sight of. To the educated eye, there is nothing more distressing than the flimsy articles of furniture, with which some houses are filled, glittering with gilt or varnish, too delicate for use, and possessed of no artistic value to make their uselessness pardonable. Work need not be clumsy to be strong, and an elegance of appearance is only gained by just proportion and neatness of

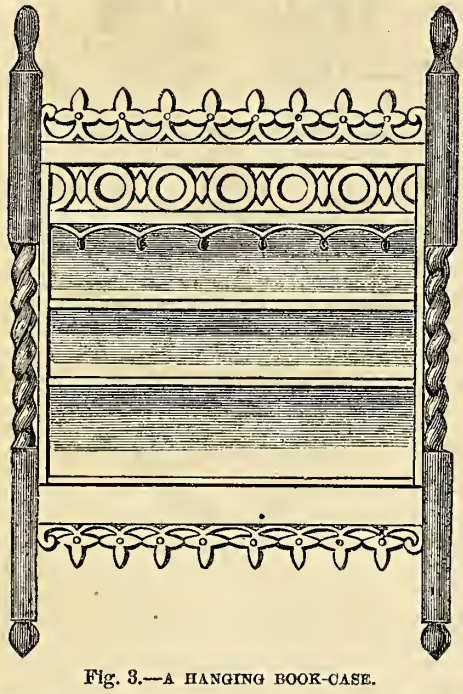
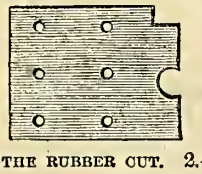


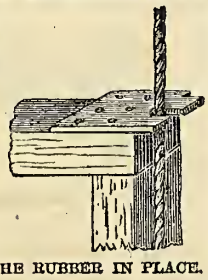
Fig. 3.—A HANGING BOOK-CASE.

finish. For making these shelves, oak will be perhaps handsomest, if not less than half inch. If a turner is convenient, the twisted shafts can be furnished at trifling expense, but as some are not so situated as to be able to call upon one, I will give the simplest directions for producing the same effect. From a square stick cut off the corners from that part which is to be twisted, and plane smoothly, so as to bring to an octagonal shape, repeat this until it is sixteen-sided, this, when the sharp edges are smoothed down a little, will be nearly enough round for the purpose. Now take two strips of paper, each of half the diameter of the wood, that is, supposing the latter to be two inches thick, each strip of paper should be one inch wide. Twist them spirally round the wood, side by side, and secure them at every turn by using pins. Having done this, paste one of them securely to the wood, then remove the other altogether. The wood left exposed must be cut away with a gouge to a depth of one-half in the center, and one-quarter its width at the outsides. Then smooth down and round off with the chisel; last of all using the sand-paper.

Protection for Windows.

"When the wintry winds do blow," and with a piercing whistle rush through the windows at the sides where the sashes slide, they chiefly penetrate at the upper part of the sides of the lower sashes, where





1.—THE RUBBER CUT. 2.—THE RUBBER IN PLACE.

they almost invariably fit so loosely as to rattle continuously. To prevent both the rattling and the entrance of the cold wind, the writer hit upon the following method: Some sheet rubber was cut into the shape shown at figure 1. These pieces fit upon the upper corners of the lower sash, the sash cord passing through the half-round hole, and the sash strip passing through the square hole at the corner. The piece of rubber is tacked upon the corner of the sash, as shown in figure 2, and should be made to fit closely to the side of the frame to keep out the wind.

Household Notes and Queries.

TAKING COLD.—One of the many ways of taking cold, is by not keeping the mouth shut when out in the sharp, cold air. The tender membranes of the throat are exposed to the chilling air, and congestion ensues, in other words, the person takes cold. The cold air should be taken in through the nostrils. Man, like the lower animals, should breathe through his nose.

DANGEROUS LIQUIDS.—*Ammonia*, especially the stronger kinds, is dangerous, a few drops being enough to injure a person. When used for cleansing purposes it should be handled with great care, that the gas, which is given off freely in a warm room, be not breathed in large quantities, and do injury to the delicate lining of the nose and mouth. *Benzine* is a liquid, in the handling of which much caution should be exercised. It is very volatile, and its vapor, as well as the liquid itself, inflammable. When employed for removing grease, or other stains, from clothing, gloves, etc., it should *never be used at night*, nor at any other time near a fire. *Ether* is another dangerous liquid, and in other than the physician's hands it had best not be employed in the household. *Alcohol* must also be used with great care, especially at night.

CLEAN THE CISTERN.—Rain water, though very pure as it falls from the clouds, takes with it more or less impurity from the roof upon which it is caught and the pipes through which it passes to the cistern. There is a constant inlet for impurities, but no outlet, and these falling to the bottom accumulate to such an extent, that the water in time becomes tainted, and sometimes decidedly unhealthful. When the water is low, a cistern should be cleaned, and this, at least, as often as once in a year.

CARE OF ASHES.—In the disposition of ashes, at least two points should be kept in mind, *safety* and *cleanliness*. If the ashes is from wood, no sifting is necessary. They should, if possible, be removed from the stove only when cold, that no live coals may be in them. In case this can not be done, great care should be taken that no fire is dropped on the floor, and in all cases a deep iron pail should be used; with a closely fitting cover. Wood ashes should *never* be put in a barrel, or in any other wooden receptacle, the number of destructive fires that have resulted from a disregard of this caution is a fearful warning. Even when no fire is visible, there is still danger. The length of time for which a fragment of live coal, no larger than a pea, will keep alive, when covered with warm, light ashes, is something astonishing; it has been known to last thus for days. A pit of stone or brick, and fire-proof, should be provided for keeping ashes in a convenient, secluded place a short distance from the house. With these precautions there is little or no danger of these fires which, when left unheeded, are not rare in town and country. Besides, ashes are worth 25 cents a bushel, and are far too valuable to be thrown away. Coal ashes, though not so valuable, should be properly provided for, on the ground of neatness, if for no other reason. Nothing is more distressing than to see, as is too often the case, a pan of coal ashes in one place and a box, or barrel, running over in another. These will be sown broadcast by the winds on the snow or ground, to be tracked into the house at every step. Coal, that is, hard coal, is rarely burned so completely that it will not pay to sift the ashes to save the unburned coal contained in them. When the clinkers are picked out of the sifted portion it is quite as valuable as fresh coal. There are various sifters, which allow the sifting to be done without dust, and if the ashes are sifted daily, the task is easy. Coal ashes are of almost no value as manure, but they are useful on heavy soils, just as sand would be, to lighten them; they make excellent paths and roads when mixed with earth, while for the earth-closet they are as useful as dried earth.

REMOVING GLASS STOPPERS.—What is more obstinate and provoking than a stopper that does not yield to the ordinary method of removal by the thumb and finger! If the fastening is due to the contraction of the neck around the stopper, it may be removed by heating the neck to expand it. The method of heating the neck of the bottle over a lamp may be dangerous, except in skillful hands. The same end may be gained—the expansion of the neck by heat—by passing a strong cord over or around the neck and moving the bottle rapidly along the string. One end of the string may be tied to a door knob, or other convenient object. The stopper is often cemented fast by the evaporation of a minute portion of the contents of the bottle. If it contain a syrup, for example, in pouring out a portion of it the neck, or a part of it, becomes wetted with the syrup; if the stopper be at once replaced there will be a thin film of syrup between that and the neck; upon standing awhile the water from this film of syrup evaporates, leaving the stopper cemented in with sugar. If the bottle holds a tincture, that will similarly answer to hold the stopper. In such cases the cement must be dissolved out. Such bottles have a lip to facilitate the pouring, and this forms a groove or channel around the stopper; by placing in this groove a little water, for syrup, or alcohol if a tincture, these will soon dissolve the cementing material, and the stopper may then be removed with ease.

A COVER FOR A BARREL.—When a barrel of flour or sugar is opened, the head should be taken out carefully, and the three parts hinged together, by means of strong linen, glued on the sides, but not the edges of the pieces, or strips of leather, nailed on as shown at figures 1 and 2. The cover is fixed

Fig. 1.—THE BARREL.

Fig. 2.—THE COVER.

to the head of the barrel, by tacking one of the end pieces of the cover, to the chine of the barrel, and the other parts rest as they are laid down. This makes a good cover for barrels in the house, and also those used in the barns.

HANGING UP COATS.—A heavy garment, like an overcoat, if hung by the loop at the back of the collar, will soon stretch out of shape by its own weight. To avoid this, various devices have been made, some of wire, and others of wood. A piece of hard-wood, long enough to reach from the outside of one sleeve to that of the other, will answer the purpose; it should have a hole bored through the center, or a loop of strong cord to hang it by upon the nail or hook. Under-coats and vests may be hung in the same way. For the "best suit" this little matter is of considerable importance to all who desire their coats to not be full in the back of the neck, and therefore, out of shape.

EATING SNOW.—The practice, so common among school children, of devouring large quantities of snow and ice during the winter months, is to be discouraged. The blood vessels and nerves of the mouth and throat are chilled, often producing congestion, followed by cold in the head, and afterwards by more serious and deeper-seated troubles. A little piece now and then may not be objectionable, but the wholesale use of ice is decidedly so. Some school children seem to regard it as an article of diet, and as if it was the only thing to eat.

GINGER COOKIES.—1 cup Water, 2 cups Molasses, 1½ cup Lard, 1 tablespoonful Soda, 2 do. Ginger. A pinch of Alum, to be dissolved in the water. Flour enough to roll out soft; bake quick.

Soldering Liquid.

In soldering tin-ware, especially in mending old ware, the use of Soldering Liquids will greatly help. There are several of these, the best is made as follows: Get any convenient vial about half full of muriatic acid; procure at the tin shop some scraps of sheet zinc; if you have no strong shears, let the tinsmith cut the zinc into strips narrow enough to enter the vial. Place the vial out-doors, or under a shed, and add a strip or two of zinc. A great bubbling or boiling will take place as the zinc dissolves; as one piece of zinc dissolves, add another, and when a piece remains without any action, or bubbling of the liquid, it is done. Fit to the lower end of the cork a piece of stick to reach into the liquid; after the liquid is perfectly quiet, cork it. In soldering, wet the place where the solder is to go, with this liquid; the drop or two that the stick will take up is enough. Do not get this liquid on the clothing, or on the skin, as it may irritate it and make it feel very rough.

A Hanging Housewife.

To find a pin, *just when it is wanted*—and who cares for one at any other time?—is a small, but often a very valuable bit of information—and so with a long list of such other useful things, which are too frequently out of reach when wanted. A hanging "housewife," has some advantage over the ordinary work basket. It has a place; it can not be readily upset by a playful pussy, or dog, or roguish children, and it is more capable of being made an ornament to the room. It should supplement rather than replace the basket. The accompanying engravings, suggest a "housewife," that may be made at no considerable outlay for the materials, and is neat and handy. Its construction is simple, but in this matter, individual taste may be exercised, and as many pockets, etc., can be put in as desired. Some heavy cloth is selected as the back or framework, and this is bordered with fringes, and ornamented with initials, and other needle-work, tassels, ribbons, etc. Figure 1 shows the affair as complete, and hanging upon its hook, and an interior view is given in the second engraving. The fact that it folds up—or down rather—is important, both as regards beauty and cleanliness. The upper half, as it falls down, gives a neat and finished appearance, and at the same time shuts out the dust, which would otherwise collect in the folds.

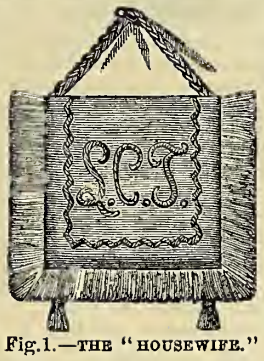


Fig. 1.—THE "HOUSEWIFE."

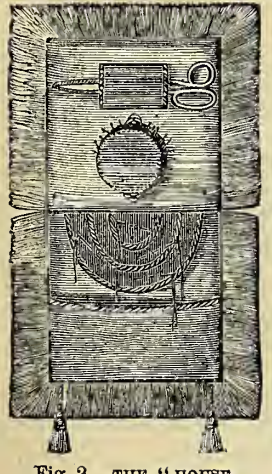


Fig. 2.—THE "HOUSEWIFE" OPEN.

Hard and Soft Water.

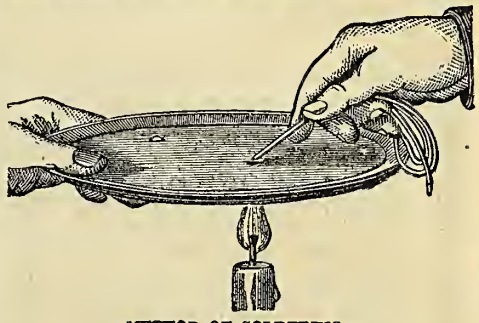
Several correspondents write that their well water is "too hard for drinking," and inquire how it can be made soft. In a general way, waters are of three kinds; soft, hard, and mineral. If the water will mix readily with soap, without curdling, it is called soft. If, when mixed with soap, there are small white curdy particles floating in it, and when used for washing this curdy matter sticks to the hands, it is said to be hard. When matters dissolved from the soil are in such quantity as to give a marked taste to the water, it is then a mineral water. The "hardness" of water is due to the presence of a very small quantity of mineral matter, most generally lime in some form. Soap is a Stearate of Soda, the Stearic Acid (an acid of fats) in combination with Soda. When this comes in contact with some Salt of Lime, the Stearic Acid, having a stronger attraction for Lime than it has for Soda, leaves that and unites with it, forming a Stearate of Lime, or Lime Soap. This, unlike Soda Soap, is not soluble in water, but when formed, it sticks to the hands, or to the fabrics washed, giving both a harsh hard feeling that is most disagreeable. This is in brief the science of the matter. All soaps are not Stearates, but some contain Oleic Acid in place of Stearic, hence are Oleates, and soft soaps have Potash instead of Soda, but in these cases, the action is the same as stated. The Lime in hard water is present in the form of the Sulphate (Gypsum), or the Carbonate of Lime (Limestone). But in the case of Carbonate of Lime, that is soluble only by the presence of Carbonic Acid in the water. When a very hard water is boiled and allowed to cool, a large share of the Lime leaves the water, and will in time settle to the bottom of the vessel. This happens to some extent if the Lime is in the form of Sulphate, because that is less soluble in boiling than in cold water; in the case of the Carbonate of Lime, the heat drives off the Carbonic Acid which held it in solution, and nearly all of that is deposited. If the excessive hardness of the water from our correspondents' wells is due to the Carbonate of Lime, boiling, before using, would remedy the difficulty, but this would not answer in case the trouble is due to the Sulphate, as only a portion of that would be deposited, and there is not, so far as we are aware, a practical remedy that will leave the water fit for use. The better way will be to make use of filtered rain-water; our back volumes give a number of filters, either separate, or attached to cisterns. At first, those who have been accustomed to hard water, do not like filtered rain-water, finding it flat and tasteless, but in some cases under our observation, the persons after a while preferred it to any other water. Those who live in the country, especially, can by a little painstaking, have rain-water in a state of great purity. The roof water-pipes and cistern should be kept clean, and by the use of a filter, as an extra protection, the best of drinking water may be thus enjoyed. Even if the taste is less agreeable, it is better to make use of it than to risk the diseases that are apt to result from the continuous use of water highly charged with Lime.

Scrape the Feet!

Every careful house-keeper, with an eye to first causes, is much interested in the way feet—or rather feet-coverings—come in from out of doors. If boys did not have muddy boots—the cares of the house would be much lessened. But boys are not the only ones that "bring in the dirt." Men-folk are often very forgetful of the amount of work they may make by not attending to the simple matter of cleaning their boots and shoes. Every door-step should be provided with a foot-scraper, and a brush or broom, and every one, as he comes in, should take the time to use them before appearing on the carpet, or clean floor. If a regular scraper—one made for the purpose—is not at hand, one can make one from a bit of hoop-iron, which is to be placed on a step or edge of the porch in a convenient place. It is well to provide a "mud-mat," which is simply strips an inch or so square—fence pickets will answer—screwed to three or four cross-pieces, an inch apart; or a more elaborate one can be made by stringing the slats upon fence wires, as shown in May, 1876. One, with muddy boots, is very apt to stamp and rub them on the steps or floor of the porch; a mud-mat will clean them more effectively, and save the porch hard wear. A very excellent mat may be made by boring holes in a board, and drawing corn-husks through the holes. Careful persons change their foot-gear when they enter the house to remain any length of time, a custom conducive not only to neatness, but so greatly to comfort, that it is to be commended.

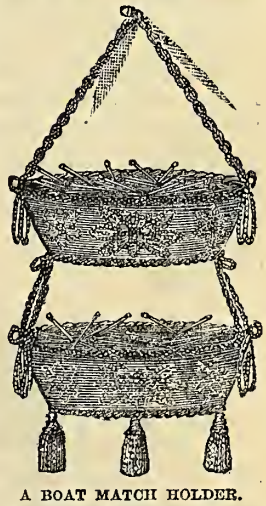
A Very Convenient Solder,

to have always at hand in the house is often hawked at the fairs and elsewhere, and sold by itinerant peddlers on the street corners or from house to house. It is a very cheap article that should be kept on sale at the Family Supply Stores. It will pay a fair profit at 50 cents a pound. We see it frequently in the wholesale metal stores in the form of wire (about No. 15), weighing say an ounce to the yard. It might be mailed to any point in the country for five cents a yard, if a few yards went together in a coil, and it would be a great convenience to those remote from a tin-shop; while very often one can quickly stop a leak in a tin vessel in a minute or two, and thus save time and the trouble and expense of sending to a tin-shop at all.—*The mode of using* is shown in the illustration. The tin dish, pan, platter, boiler, or other article, is heated over a candle or lamp, or a coal from the stove, at the point of leakage, and the solder-wire rubbed over the hole until it melts, when, by a little dexterity soon acquired by practice, a drop of the solder will be left smoothly over the opening. Too much heat is to be avoided, and if some of the solder runs through it can be pared or filed off when cold. The only other point is to have the solder touch and adhere to the tinned surface all around the leak. If the tin is very rusty for some distance around the opening, the solder may be made to "take" to the rusting portion by touching it with a drop of the soldering fluid mentioned elsewhere.


METHOD OF SOLDERING.

An Ornamental Match Holder.

If all the different match-safes, and match-holders could be brought together, they would form a collection as varied as the different designs for cooking stoves, and washing machines. To the already numerous patterns, we add another, which may please those who like to make fancy articles, that shall be useful, as well as ornamental. The design is that of a suspended boat, and admits of a great variety, as the boat may be a miniature plain scow, a fanciful "shell," an Indian canoe, or something more elaborate. It is to be suspended by cords, plain or headed, by ribbons, or otherwise. The boat may be made of wood, cardboard, or even of tin: if of the latter, it may be covered with perforated card-board, upon which worsted patterns are worked. Whatever the material, it is intended that the exterior shall be ornamented, by small, bright-colored pictures, or in whatever manner fancy may suggest. At the bottom, or elsewhere, should be fixed a piece of emery paper, to furnish a place to scratch. The boat may have a partition amidships, providing two compartments, one for the unused matches, and the other for the burnt and useless. In some cases, a receptacle is made for the burnt matches, by suspending a second boat below the first, as seen in the above engraving.


A BOAT MATCH HOLDER.

BOYS & GIRLS' COLUMNS.

The Doctor's Talks.

Last month we were t*e* ing about Inertia, and it was there mentioned that a body set in motion can not stop of itself, any more than it can start of itself. That a marble set in motion by rolling on the floor would continue to roll, were it not stopped in part by the resistance offered by the air, and in part by that presented by the floor. Let us take, for illustration, besides a boy's marble, also a square block of marble, of the same weight, and the smooth table instead of the floor. You know, without trying it, that if you give both the ball and the block a push with the same hand, that the marble will roll quite across the long table, while the block will move but a few inches. If you think why this is, you will at once see that the block touches a very much larger part of the surface of the table than the ball, and that the rubbing of the two prevents it from going far. This obstacle to motion by the rubbing together of two surfaces

IS CALLED FRICTION,

a word that comes from the Latin word *fricare*, to rub. You know that the block will slide easier upon the smooth table than it will if there is a cloth upon the table, and more readily upon ice than upon the smooth table. In the case of the round marble, friction helps stop that, as you know that it will roll farther on the smooth table than on the table-cloth, and upon smooth ice much farther than on the table. There are then too kinds of friction, Sliding Friction and Rolling Friction. Suppose you try to push a long wooden box along the bare floor. If this box weighs 100 pounds, you will have to push against it with a force equal to about 50 pounds before you can start it. You think that by turning the box upon its smaller end, which will present less surface, you can move it easier. Try it. Not a pound easier will it move. The amount of friction does not depend upon the size of the surface, but upon the pressure. That is one of the laws of sliding friction. There are others laws concerning friction, but we will not give them now.

THE IMPORTANCE OF FRICTION

will be seen when we consider that *one-third* of the power of machinery is used in overcoming friction. Hence to reduce friction to the least possible, various contrivances are used. There is more friction between two surfaces of the same metal than between different metals. An iron shaft will run in a bearing of brass with less friction than in an iron one. If the wheel of our wagon does not run readily, we know that there is friction at the hub; we apply grease, and that diminishes the friction, the various articles used to reduce friction are called

LUBRICATORS,

a word which, like friction, comes from the Latin, and means, *to make slippery*. A number of lubricators are used: oil, lard, tallow, soap, black-lead, and even water. But in many cases, what are called "friction wheels" are used, though the better name would be anti-friction wheels. An axle of a large wheel is made to turn upon two wheels placed together as seen in figure 1, which shows an axle resting upon the rims of two wheels. As the axle turns, the wheels turn too, and the friction is only at the axles of these small wheels. It is common to hang a grindstone in this manner, as no doubt many of you have seen. Figure 2 shows the contrivance for a grindstone, the stone, however, is not there; what might be taken for the stone is two iron plates, which are made to screw up against the stone, one on each side; the friction wheels where the crank is are covered by a

Fig. 1.—FRICTION WHEELS.

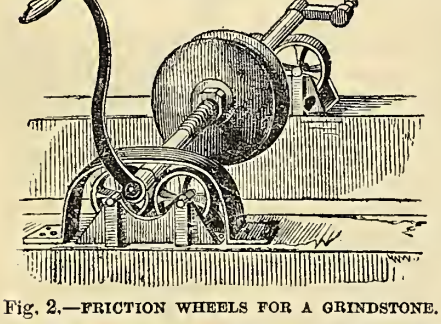


Fig. 2.—FRICTION WHEELS FOR A GRINDSTONE.

guard to keep the clothing of the one who turns from catching, and also from getting soiled. The least known friction between two substances is between polished steel and some of the harder precious stones, from the cheap amethyst up to precious rubies and diamonds.

"JEWELLED WATCHES"

are not watches ornamented with jewels, but those in which the axles of the wheels run in jewelled bearings; even very common watches have some of the more important bearings fitted with cheap jewels. Knowing that so much pains is taken to remove, or overcome it, you may be tempted to say I wish there were no friction.

But that would be a hasty wish; if it could be granted there would be a queer state of things. Our wooden buildings and interior woodwork would fall apart, as it is only held together by the friction between the wood and the nails; you could not walk without slipping up; the vessels could not go to sea, for all their ropes would untwist; the locomotives could no longer pull their trains—indeed, the difficulties we some times find on an icy morning would be as nothing to it. This world is very well arranged as it is....When you strike a ball that is at rest with your bat, the motion of the bat is imparted to the ball, and off that goes. If you strike with the bat a ball that is thrown towards you, you not only stop the ball, but, if you hit it hard enough you send it off in another direction. This is one of the many instances that illustrate the

COMMUNICATION OF MOTION.

If you place on the table one of two ivory balls of equal size, or even two marbles, and roll the other against it, if the balls strike fairly the one that is hit will move on, while the one that gives the blow will stop, it having given up its motion to the other ball. The same thing may be shown by hanging the balls by strings. A still more striking experiment is to take several elastic balls, as shown in figure 3. By drawing out the ball, *h*, to a short distance, and letting it drop to strike *g*, it will give up its motion to *g*, but that can not move, so it imparts its motion to *f*, but that is prevented from moving, and the motion goes on through all the balls until the last one in the row, *k*, is reached, and being free to do so, that flies off as far from the others as *h* was raised before it was let fall. Glass marbles are often used by boys, and these answer well for this experiment; as boys can not readily attach strings to the marbles, they can show the action nearly as well by placing two square straight-edged sticks near enough together for their edges to form a

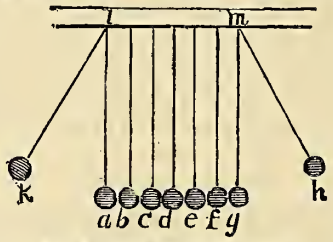


Fig. 3.—THE ELASTIC BALLS.

groove for the marbles to roll along; as the marbles will only touch the corners of the sticks there will be but little friction. But this experiment, figure 3, not only shows that motion is communicated by one moving body to another, but it is one method of showing one of the important laws of motion, that

ACTION AND REACTION ARE EQUAL.

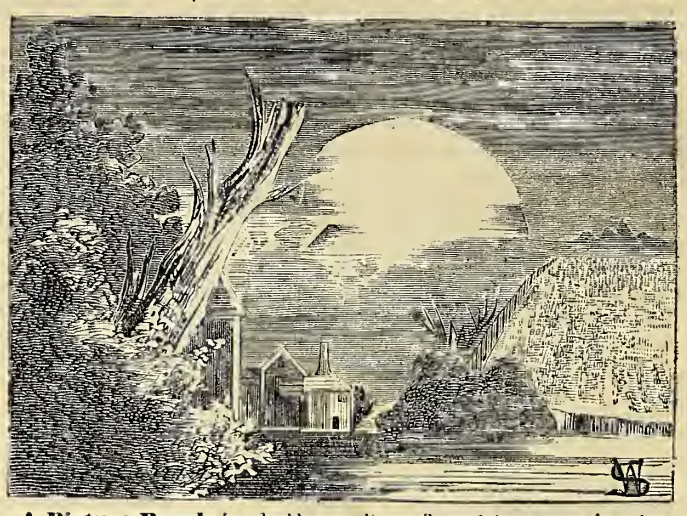
If you strike the table with the hand, the table reacts, returns the blow with a force that makes it unnecessary for you to repeat the experiment. If you fire a bullet from a gun, the force of the gases formed by the burning powder pushes the bullet out with great force, but it also pushes the gun back with equal force against the shoulder, or as is commonly said

THE GUN KICKS.

By making the gun heavier, the powder has to react upon so much more matter, the motion is felt but little.—If the gun be held *firmly* pressed to the shoulder, the recoil seldom hurts much; but if it has any distance to move back before striking the shoulder, it acquires a strong force, and strikes a much greater blow, just as a hammer pushed against a nail has little effect, but if moved a little through the air it acquires a strong momentous force, and drives the nail into the board.

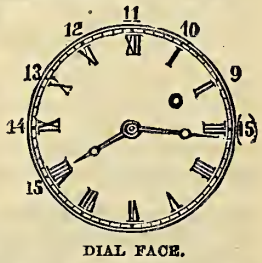
A Curious Time Trick.

Here is a rather neat trick, and one quite new to us. Let a person tell when he ate his dinner, and another, with certain conditions, can know when the same person took his breakfast, or arose in the morning, etc. Suppose Mr. A. had his breakfast at a certain hour, as at seven o'clock, which he does not tell; but gives the hour that he ate his dinner, as at two in the afternoon. Add 12 to the hour given—in this case the sum will be 14. The person is then requested to count back on the dial of the watch or clock (it may be done in the head), *beginning* with the number or hour that he had his breakfast, and which he has not told. In this particular case it will be



A Picture Puzzle is a double one; it usually contains a scene in nature, with the lines so arranged, that after a little looking—or it may be that it will require a good deal of inspection—the object intended comes out, and ever after you can not look at the picture puzzle without seeing it. The one here presented, is perhaps too evident "on the face of it," to be much of a study; but nevertheless, it shows how the artist can, in some measure, hide one thing behind another, and it will serve very well to show how such pictures are made.

7, and as he counts to 14 he stops at the hour of breakfasting. Let us try it again. The boy rose at 8 o'clock (not very early for a smart boy), and had his dinner as late as 3 o'clock. Both of these hours are indicated by the hands on the dial. Being ashamed of his rising, we will suppose, he only tells when he had his dinner. Twelve is added to the 3, and we have 15. He begins at 3, with the rising hour in mind (8), and counts back on the dial until 15 is counted, and this comes to 8, the hour of rising, and his tardiness is exposed. The counting back is indicated by the figures outside of the dial. If you try it in all possible ways, the truth will out, no matter what the hour in mind is or the hour selected.



DIAL FACE.

Our Puzzle-Box.

NUMERICAL ENIGMA.—BIBLICAL PROVERBS.

1. I am composed of 80 letters:

The 12, 23, 49, | 77, 44, 61, | 18, 3, 23, 34, 38, | 48, 62, 76, | 6, 26, 32, 33, | 5, 64, | 29, 70, 46, is a proverb of truth.

The 67, 2, 20, 27, 37, | 40, 63, 14, | 43, 19, 49, 11, 16, 32, 1, | 78, 1, | 65, 8, 71, 66, 17, 22, 70, 4, is a proverb of caution.

The 28, | 1, 45, 33, 42, 13, | 24, 73, 32, 20, 21, 69, 75, | 10, 54, | 45, 50, 2, 9, 25, 29, 48, 14, 39, 8, 40, | 15, 63, | 18, 35, 36, | 33, 66, 56, 7, is a proverb of honesty.

The 80, 60, 28, 55, 21, | 23, 72, | 31, | 69, 19, 79, 32, 30, | 5, 62, | 15, 35, 51, | 4, 59, 49, | 38, 53, | 6, 44, 78, 23, 33, 52, | 41, 2, | is a proverb of education.

The 59, | 41, 8, 63, 58, | 21, 73, 47, 57, | 10, 27, | 74, 20, 34, 19, 68, 22, | 37, 70, | 12, 13, | 69, 35, 78, 42, 16, 29, | 43, 38, 28, 40, | 41, 3, 26, 31, 46, | 17, 25, 69, 44, 36, 54, is a proverb of reputation.

The whole is a proverb of Solomon. ISOLA.

NUMERICAL ENIGMAS.

2. I am composed of 40 letters:

My 2, 9, 36, 7, 14, 5, 12, 20, was one of the greatest of military men.

My 38, 31, 16, 9, 8, 33, 40, 21, 17, came from a foreign land to fight for American liberty.

My 18, 11, 23, 3, 29, 20, 23, 1, 31, 38, will long be remembered.

My 10, 22, 20, 19, 9, is the birth-place of the discoverer of America.

My 35, 4, 17, 36, 9, 30, 24, we often think of with sadness.

My 18, 28, 15, 23, 9, is one of the oldest nations on the earth.

My 18, 14, 39, 6, 37, 34, was the founder of France.

My 19, 13, 32, means away.

My 16, 25, 26, 27, is a member of the body.

My whole is an adage that all young folks ought to remember. KEN. C. HILL.

CHARADE.

A very little word, my first,
Used constantly each day;
A simple pronoun names my next,
Though 'tis not "yon" or "nay."

And now from out some sacred spot
Rises my solemn whole,
To calm and fill the heart with peace,
Or elevate the soul.

CROSS-WORD.

My first's in the blossom but not in the tree,
My next's in the ocean but not in the sea,
My third's in the pantry but not in the shelf,
My fourth's in another but not in yourself,
My fifth is in finger but not in thumb,
My sixth is in orange but not in a plum,
My seventh is in cottage but never in a hut,
My eighth is in acorn but not in a nut,
My ninth is in shoulder but not in an arm,
My tenth is in pasture but not in a farm,
My eleventh is in village but not in the town:
My whole is a poet of ancient renown.

SCATTERED SQUARE.

(Make five or more square words from the following well-known verse of poety, by taking four letters from the first line for the first word of the square: Four letters from the second line for the second word; four from the third line for the third word, and four from the fourth line for the fourth word.)

Old mother Hubbard went to the cupboard
To get her poor dog a bone,
When she got there the cupboard was bare,
And so the poor dog had none.

HALF SQUARE.

1. Is snre to come in the spring.
2. "Aft gangs agee."
3. An animal.
4. A preposition.
5. A measure.

ANSWERS TO PUZZLES IN THE DECEMBER NUMBER.

BIBLICAL DOUBLE ACROSTIC. *Esther—Darius.*

E—lda—D
S—heb—A
T—abo—R
H—agga—I
E—lih—U
R—hode—S

ANAGRAMATICAL OMISSIONS.—1. Enemies. 2. Destroyed. 3. Onslaught. 4. Confidentially. 5. Malevolent. 6. Consternation.

METAGRAM.—*Skate*, from which may be made stake, steak, Kate, take, tea, eat, sat.

CONCEALED NOUNS.—1. Flagon, hem, ewe, ewer, comb, bat. 2. Cub, banjo, reed, drum, man, fly. 3. Ham, toast, ton, fir, raid, fez, key. 4. Fish, hat, crown, ear, earth, bar, fork, goat, ton.

NUMERICAL ENIGMA.—"Should auld acquaintance be forgot?"

ANAGRAMS.—1. Undesirable. 2. Utensils. 3. Untangled. 4. Clarified. 5. Gridiron. 6. Fashioned. 7. Superior. 8. Commensurate. 9. Repudiated. 10. Invalidate.

DOUBLE DIAMOND.

M
CAR
CANIS
PARSNIP
WAIST
TOE
N

PI.—A little nonsense now and then,
Is relished by the wisest men.

COMBINATIONS.—1. Asafœtida. 2. Minerva.

No. 471.—ILLUSTRATED REBUS.—If you would appear well, be natural.

Pop Corn.

When there is a little party of children gathered together, to spend a pleasant winter evening, capital amusement can be had with a corn-popper, and some pop-corn. It is such fun to see the little hard grains, turn themselves inside-out with an explosion, as the popper is gently shaken over the hot coals. Only a few kernels of the corn are put into "the wire cage on a stick," and in a few seconds the popper is as full as it can hold of nice, fresh, hot pop-corn. Who does not like to eat it, and who can not eat just one more nice "pop"? It seems as if "there is always room for one more." Pop-corn is nice enough when fresh and alone, or with a trifle of salt to season it, but when mixed with enough warm molasses candy to make the grains pack into great balls, it becomes something very attractive in both appearance and taste. We remember one time being guilty of excessive eating of pop-corn—a good many have a weakness that way—and some friends, wishing to show an appreciation of our efforts, prepared a pop-corn ball about the size of our head—and put it on the table. We had pop-corn for nearly a week, and that of the nicest kind. There was no cotton in the center as was looked for—all solid, and of the best quality. Every child likes pop-corn, and we suggest that those boys who do not usually grow it, had better look around for some good sort for seed and next spring plant a small patch of ground. It tastes all the nicer, and perhaps pops better if raised by your own hands.—Try and see if you can not raise a good crop to pop.

No. 473. Illustrated Rebus.—Words of wisdom from a very wise part of a very old book. A little pleasant study will reveal a wholesome truth.

A Boy's Composition on Winter.

Winter is the time of the year when it is real cold. There is lots of snow, too, where we live, and most of the neighbors are drawing logs to the saw-mill and chopping wood. We draw our wood from the woods on a long bob-sled made to draw wood. There are horses to the sled, and I drive them sometimes, but usually hitch my new sled, which I got at Christmas, behind the load, and get tipped over sometimes. The last time when we were coming down the hill, and John made the horses trot, I went head over heels into the gutter, and John did not stop for me but just laughed.

Winter is also the time for going to school, and having a great time snow-balling at recess, and some of the big boys strike pretty hard sometimes. Some of us have built a snow fort, and when we are in it we feel safe unless they try to take the fort, when we have to run for our lives. The girls do not like snow-ball much, but get their faces washed in snow, which I think is just as bad. Winter is the time when the days are short and the evenings very long. The days are not more than half as long as in summer, and the nights are twice as long to make it all square, I suppose, but I never staid awake to see. Winter is the time when we have buckwheat cakes; and pretty soon we will begin to have early lambs, and take care of them in the house; at least we did last year. Grandfather says the winter of '37, I think he said, was the coldest he ever saw, but if it was much colder than last Thursday night, it must have been "a regular snifter," as old Jim Cooper said. Winter is a good time to go visiting if it were not for the chores. Really the best part of winter is when it begins to get warm again, and the birds come back, and the leaves begin to grow. I don't think we would, many of us, like to have winter all the while. We have enough to suit me.

DRAWING LESSON UPON THE SLATE.

The Third Drawing Lesson.

In our first and second lesson we gave for practice figures that had only straight lines, ending with the table and chair. Such pictures, though they may be easy to draw, are not very pretty. It is when curved lines are present in the outline that an object is pleasing to the eye. We find very few bodies in nature that are entirely bounded by straight lines. The earth as a whole is nearly a sphere, not "flat like a pancake," as the ancients thought. A man would be considered crazy if he were trying to find a square pumpkin, or an animal with no curves in its outline.—To know how to form curves, is then one of the essential things in drawing most of the objects which we see around us. For the purpose of illustration, we have placed a number of things—as great a variety as possible—upon a small slate, which many of our young readers will doubtless copy upon their own.—If we could see all these sketches together, especially the *first trials*, what an interesting picture gallery it would be! The easiest object, and the one which most will take first, is the pear; it is about as simple a thing as could be selected, being easier than a circle, if the latter is drawn without anything to guide the pencil. It will be seen that straight lines do not take part in the outline of this fruit—and what fruit does have flat surfaces. You would have to grow a watermelon in a box to make it square, and then it would probably burst through and take on a rounded form. The pear being drawn, it is a question which would be the next choice. The trumpet combines straight and curved lines, and also illustrates, that lines may disappear by passing behind some object and come in view again. One side of the upper end of the trumpet is hidden from view by the larger lower portion which is upon this side of it. Draw the front lines first, and then fill in the others, by making the bottom first, and so on to the top. The jar is not so hard, but will require considerable time and much care, as it has a number of straight lines close together, and if they are crooked the whole will look badly. The Morning Glory will not be found very difficult after the outline of the flower is once made; by the outline is meant the outer edge of the upper flaring part. It may be the easiest to begin by making the lines which run like umbrella bows from the center, and finish with the rim. Here the attachment of the upper part of the flower to the tube is shut out of view by the portion which spreads out towards the reader. The "pussy" will require some patience in the making of her eyes—but she will hold still until all are done with her. Begin with the head, then the neck, back, and legs. Put in the eyes and fix up the whiskers the last thing. The butterfly will be easy, so far as outline is concerned, but to put in the bars and dots on the wings much care is to be taken to get them of the same size and shape on the right and left wings; the beauty of the picture depends almost entirely on the markings. For some pupils the turkeys will furnish a subject for a whole evening, and if one of you spends several upon it will not hurt the turkey, and will do you good. Try and try, again and again, until it can be drawn in good shape in quick time. The face is the last part of the lesson, and in some respects the most difficult. Any one can put lines together so that an ordinary person will know it is intended for a man, but to arrange the lines to produce the likeness of some particular man is an entirely different thing. Probably this center-piece will furnish work—and pleasant work—for many pencils before the young draftsmen are satisfied with their work. We may turn the slate over at some future day, and show what there is on the other side.

Icicles—How are they Made?

If a person, upon looking out of the window, should say—as he might at this hour—"What large icicles are forming on the eaves of the barn!" one could tell pretty well what the weather is, and has been. What are icicles?—Perhaps some of you will answer: "They are sticks of ice, long—long enough for canes sometimes—usually more or less ridged and rough, tapering down to a pretty sharp point—every body knows what icicles are!"—How are they formed?—Some say they grow, but do they grow as children do, or cats, or even corn or apples? Do they grow on the inside or the outside? How does an icicle start?—But to answer this question, is the weather freezing or thawing when these hanging sticks of ice begin to form?—Freezing, of course; but there must be water running down the roof and off at the eaves, to begin with. Icicles form then after a thaw, when the weather sets in cold and the temperature is below freezing. As the drops of water arrive at the edge of the eaves, or "the jumping off place," they become so cold that they can not jump but become solid. Along come some more drops, and spread out over those that have gone before and have frozen stiff, and become a thin film of ice, but the tendency to run down causes the stick of forming ice to lengthen out towards the ground by the water running down and freezing at the end. The water keeps coming down, and as it strikes the ice of the icicle it runs along, a film freezing all the time. Thus it increases in size and length by the constant freezing of layers of water on the outside. If the temperature is just a little below the freezing point, the icicle will be longer and more slender

than when the change of weather is sudden and the cold is severe—they will then be quite short and "stubbed." Some children are very fond of eating these cold hard sticks, but they are not good.

One of the 'Ologies.

Boys and girls are not to be blamed for thinking that this world is full of pretty long words, and not only long, but hard ones to spell, pronounce, and understand. Not long ago, some little one, not so young but she knew a great deal about some things, thought that most of the "study books" were on some *'ology* or other. She is more or less right. We have Physiology and Lithology, Geology and Zoölogy, Philology and Entomology, Theology and Meteorology, Mineralogy and Anthropology, Ethnology and Psychology, but we need not give any more. These words end in *ology*, and this word, like many others in our language, comes from the Greek. The meaning of this termination, or ending, as you may please to call it, is *discourse* or *treatise*, a thorough explanation—a complete description "a telling about the thing." Let us look into this matter of the *'ologies* by taking one; as, for example, *Pomology*. Children are more *Pomologists*—there is another big word!—than perhaps Anthropologists or Geologists, though I have known some very good young Geologists. What does *Pom* mean? we know a little about the rest of the word—it comes from the Latin language which the old Romans talked, and means *fruit*. If we put the meaning of the two parts of our word together, we get *fruit discourse*, or, in other words, a complete treatment of the subject of fruits. As soon as we see the meaning of the word it is not so hard—words look blank and hard when we do not understand them. Suppose some person has made a great study of fruits, as pears, apples, etc.; he ate them when a boy, perhaps loved the subject so much that he even went into his neighbor's orchard to get specimens for investigation, and after a number of years of studying the various kinds, seeing how they differ from each other, time of ripening, time of keeping, and many other things, he should put all his knowledge of fruits into a book, what should we call the book? We might say this is So-and-So's book which treats on the different kinds of fruits, their size, color, taste, and keeping quality, etc., or we might simply say this is "Mr. So-and-So's *Pomology*."—Now if any boy or girl is trying to learn the names of the various kinds of apples and other fruits, by asking the father or mother, or by going to a fair where such fruits are exhibited, and remembering how this and that kind looks, its size, shape, color, etc., that boy or girl is studying Pomology, and if the study is continued until thoroughly understood, will become a pomologist.

THREE MICE THAT ARE NOT BLIND.

The Merry Mice.

The bright little creatures, three of which are presented in the engraving, have had from early times a reputation for stillness, shyness, hatred of cats, and love of cheese. There is but little friendship between boys, "take them as they run," and the ordinary mouse—and to be fair we must "take him as he runs" too. You will have to take him thus in most cases if he is taken at all. But before we kill the little mouse—and we do not argue that he ought not to be destroyed—let us see if there are not some things about him that are interesting. Let us suppose each reader is so situated that a real, live mouse is in sight, and yet Mr. Mouse does not notice that he is being watched. This thought takes me back to that old, red school-house on the hill, so old and shabby that a tramp would prefer to *put up* in the fence corner than enter; a building where the walls were full of big holes and a host of friendly mice made many daily visits to get their supply of bread and cheese. Have I not watched him with his head at the hole and his sharp eyes, just like beads looking out from under his thin, upright, watchful ears, and then "holding in" with all my might—it was so hard to keep still—see him soon creep, and jump along the floor a few inches at a time until he found that for which he lives—a tender morsel, which had fallen from some child's dinner-basket, or been dropped on purpose for the fun that it would bring. A mouse in school, if allowed to have his own way, watched by happy children's eyes, but not knowing that he is observed, is perhaps the most fertile source of bad lessons that there can be; but it has the good side in that it keeps the pupils still. Yes! "as still as mice"—a stillness that a teacher feels, and will usually remove. Aside from the timid and quiet way in which he gets his spoils, which is cunning in an object so small as a mouse, there is the beauty of his very self. A mouse that has been fortunate enough to enjoy a good living, is plump and pretty; his coat is shiny, his ears are clean, and his *mous*tache (which by the way, means *mouse like* or *mouse-colored*) is long and well kept. A nice mouse of itself—if one could lose sight of how he has made himself look so by petty theft and midnight plunder—as an object of beauty, is worthy of our highest regard. He combines all the smartness of the fox, and the delicacy of the deer; the shyness of the antelope, and the wisdom of the beaver—and all in a little lump so small that he builds his nest in our deserted boot, and rears a family before he is observed. It is an old story that these little creatures so troubled an old bachelor that, driven to despair, he went a long way to a very large city to procure a housekeeper that might be able to drive away the mice. Of the success of the undertaking we are not told—at least, I only remember that through some bad arrangements, on the way home there was a great smash and a tumble down time generally. But this story as it is told only goes to prove that mice at heart are dreadfully bad. I would gladly call them good, if they were so; but

"They climb upon the pantry shelf,
And taste of all they please;
They drink the milk that's set for cream,
And nibble bread and cheese."

Their whole nature must be changed before they can expect to gain the lasting friendship of man. Mice and men may have some things in common, but the mouse's best interests are not man's, and that which promotes the highest enjoyment of man is opposed to the well being of Mr. Mouse. There is an eternal warfare between them, and through that living instrument—the dread of every throbbing, civilized mouse's heart, the sworn enemy of the whole mouse tribe—the cat—man may hope to keep this little wolf from the door. No one, it seems to me, can help admiring the mouse as to the form and texture of his being—his eye is bright, his fur soft, and his outline pleasing; but his disposition is bad. He comes when we do not want him, and goes only when he can injure us no more, or his own personal safety demands it. He looks better eating cheese in a picture than when in flesh and blood upon the pantry shelf. He is never to be trusted, and is not safe until he is dead, and even then it is our wish that he had died away from home. That he is closely related to the rat is almost enough to condemn him; but his own deeds are the ones by which he is judged. It is a sad fact that the mouse was filled with the spirit of adventure during the early Pilgrim days, and came to this country in those old ships to establish a colony in the new world, that is now as wide spread as the Continent. He has been very successful in the work of colonization; it has not been without its struggles and conflicts, and if the whole history of the subject was known it would doubtless be a story of trickery and cunning without intent to kill, on the mouse's side, and self-protection mingled with no little malicious bloodshed on the other—if honestly written by himself it would be "a plain unvarnished (mouse's) *tale*." UNCLE HAL.

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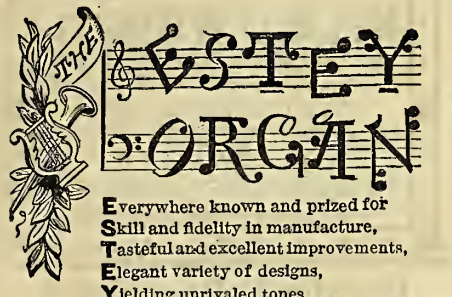

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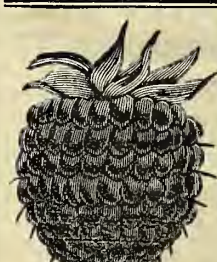

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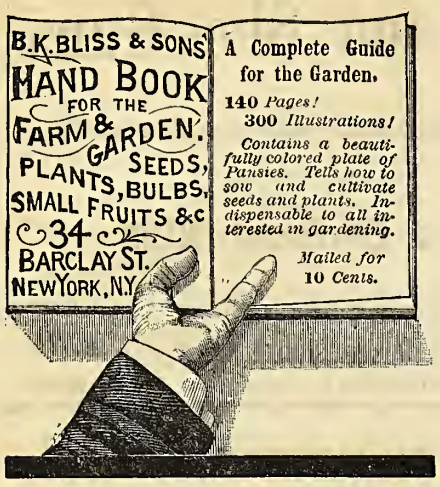

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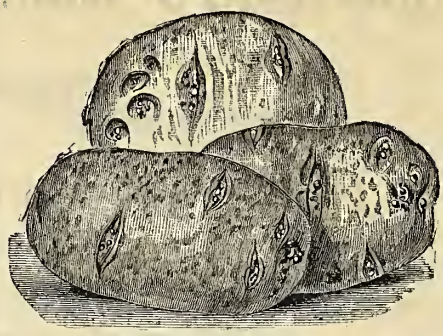

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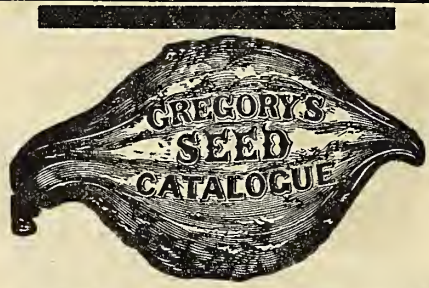

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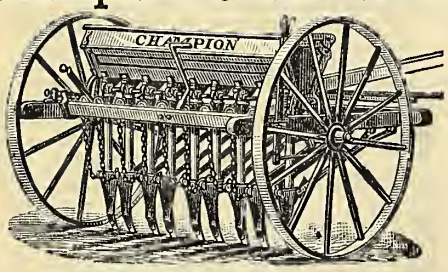

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With or without Fertilizer Attachment or Gum Spring Hocs. It has a **perfect force feed** Grain Distributor that will sow accurately all kinds of grain without the least injury to the seed.

UNEQUALLED AS A CORN PLANTER.

Fertilizer attachment **can be relied upon** to sow all kinds of commercial manures whether dry or damp in any desired quantity. **Draft Light, Construction Simple, but durable.** Liberal discount to cash customers. Send for descriptive circular.

JOHNSON, GERE & TRUMAN. Owego, Tioga Co., N. Y.

Gardner's Railway Pitching Apparatus.

Consisting of Carrier, Grappling Fork, Pulleys, and Hooks. For unloading Hay, Grain, Beans, Corn Stalks, loose or in bundles, etc. Can be used in any barn. Also, Improved Stacking Apparatus. Send for Circular, and get valuable information.

E. V. R. Gardner & Co., Johnson's, Orange Co., N. Y.

THE BEST.

BARNES' PATENT FOOT POWER MACHINERY.

Circular Saws, Scroll Saws, Lathes, Formers, Mortisers, Tenoners, &c. For actual workshop business.

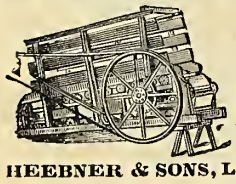
COMPLETE OUTFITS for Mechanics and Amateurs.

MACHINES ON **TRIAL** IF DESIRED.

Send for Descriptive Catalogue and Price List. Mention this paper.

W. F. & JOHN BARNES, Rockford, Ill.

HEEBNER'S HORSE POWERS



WITH

Patent Level Tread

AND

SPEED REGULATOR.

Heebner's Improved Little Giant Threshers.

HEEBNER & SONS, Lansdale, Mont. Co., Pa.

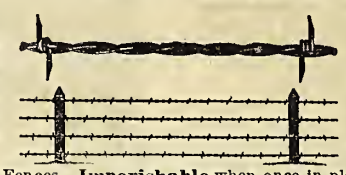
STEEL BARB FENCE,

Solves the **FENCE** Problem by meeting all the requisites of

THE PERFECT FARM FENCE.

Every Land Owner

should not fail to examine the merits of this fence. It is cheaper than all others. Easiest handled, and in fact just what the people of the treeless States have needed for years.



To All Inquirers.

It is an impassable barrier, yet harmless. Prohibits trespassing. It can be put up by any one, and is compactly put up for transportation. In fact, it is the only fence dog and wolf proof.

Cheaper than Wooden Fences. **Imperishable** when once in place. **Indestructible** by the Elements. Wastes no soil by SHADE. Has **no Weedy Fence Borders. Shelters no Enemies of the Crops.** A **Protection** at all seasons. It is **easy of Construction.** It needs **no repairs.** Accumulates **no snow-drifts.**

A STEEL THORN HEDGE.

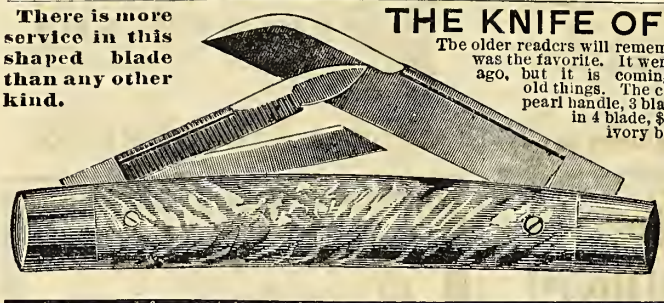
Impassable Barrier. Prohibits all Trespassing. It can not be destroyed by fire, wind, or flood.

100,000 miles of Barb Fence have been erected in 1876, 1877, 1878. Agriculturists, Herdsmen, Sheep Husbandmen, Ranchmen, Vineyard Proprietors, Orchardists, Nurserymen, Railroad Companies, Road Proprietors, and all owners and occupants of soil and areas to be protected.

Manufactured by **Washburn & Moen Manufacturing Co.,**

WORCESTER, MASS., and 21 CLIFF ST. NEW YORK.

There is more service in this shaped blade than any other kind.



THE KNIFE OF OUR DADDIES.

The older readers will remember when the **"Congress Knife"** was the favorite. It went somewhat out of fashion 20 years ago, but it is coming back again with some other good old things. The cut shows **"Our Best,"** best finish, pearl handle, 3 blade. Price, $1.50, postage free; same in 4 blade, $2.00; or with ebony handle, $1.00; and ivory handle, $1.25.

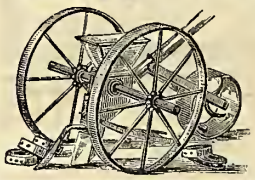
Our **"Old Fashioned"** Razor Steel Jack Knife, 2 blade, 50 cents, or same extra heavy, 75 cents.

"Our Best" Pruner, $1.00, and lighter ones for 50 and 75 cents.

All blades warranted, and replaced, if soft or flawy. Circulars free. Address,

MAHER & GROSH, Cutlers, Toledo, Ohio.

THE MONITOR SEED DRILL.



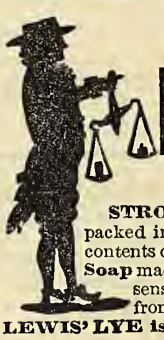
This is the most complete and positive **Seed Drill** ever invented. It is radically different from and superior to all others. It is the **only** machine which measures and drops the seed with a positive motion, and exactly the same amount at each foot or yard. It has been tested by 6 years' use in Massachusetts, and was awarded the **highest prize** at the "Centennial." ☞ The **"MONITOR"** has been thoroughly tested during the seasons of 1878 and 1879, and heartily endorsed as a

FIRST-CLASS MACHINE

by Professor Geo. Thurber, of New Jersey, and by Jas. Vick, of Rochester, N. Y.

☞ **Agents Wanted.**—For full descriptive circular and testimonials, address

THE MERRIMAC MACHINE CO., Newburyport, Mass.



The Ready Family Soap Maker: LEWIS' PERFUMED LYE

98 Per Cent. Pure!

STRONGEST AND BEST LYE MADE. *This LYE is a FINE POWDER,* and packed in cans with an ordinary slip-lid like our Baking Powder, so that any portion of contents of can may be used without spoiling balance. **12 pounds of Perfumed Hard Soap** made in *twenty minutes without boiling,*—and your wash will be sweet and clean to the senses, without that nasty smell produced when using ready-made Soap or Soap made from other Lye. **One teaspoonful will soften five gallons of hard water.**

LEWIS' LYE is 28 per cent. stronger than any other Lye or so-called Rock or Ball Potashes.

MANUFACTURED ONLY BY

GEORGE T. LEWIS & MENZIES CO., Philadelphia, Pa.

Stockbridge Manures. Bowker's Phosphates.
ANIMAL MEAL. LAWN DRESSING.

NEW PAMPHLETS AND CIRCULARS JUST OUT—MAILED FREE. Address

BOWKER FERTILIZER CO., 43 Chatham St., Boston, Mass. 3 Park Place, New York. 81 Exchange St., Rochester, N. Y.

☞ **FRIENDS!** If you are in any way interested in

BEES OR HONEY,

We will with pleasure send you a sample copy of our **MONTHLY GLEANINGS IN BEE CULTURE,** with a descriptive price-list of the latest improvements in **Hives, Honey Extractors, Artificial Comb, Section Honey Boxes,** all books and journals, and everything pertaining to Bee Culture. *Nothing Patented.* Simply send your address on a postal card, *written plainly,* to

A. I. ROOT, Medina, Ohio.

CHALLENGE FEED MILLS.

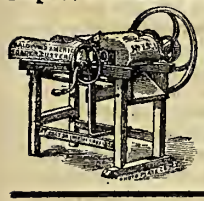
Grinds three times as fast as any other mills. Always successful. Over 500 First Premiums and Medals. Over 15,000 in use. They do not clog or heat; grinds 60 bushels per hour. All successful Iron Feed Mills INFRINGING OUR PATENTS. Beware: Buy none but the best. Remember the Courts have sustained our Patents. Also the best Wind Mills, Corn Shellers, Horse Power Wood Saws, Fanning Mills, and Pumps. Address CHALLENGE MILL CO., Batavia, Ill.

DEDERICK'S HAY AND STRAW PRESSES are guaranteed cheaper at price than any others as a gift or no sale. If inexperienced purchasers are confused by manufacturers of inferior machines who claim their presses are best, then order a press of each on condition that you keep the best, and advise all that DEDERICK'S PRESS will be there. The absence of all others will then convince you that DEDERICK'S PRESSES are beyond competition. Grand Centennial and Paris World's Fair Prizes, and all the United States Fair Premiums for years past for DEDERICK'S PRESSES. Beware of presses infringing Dederick's Pat. Press and Bale. Address, for catalogue,

N. B.—The attention of the public is respectfully invited to other advertisements of Hay Presses which have appeared in these columns, all of which make Dederick's patent sectional quadrilateral bale bound lengthways, and by Dederick's patent process and machinery, and some even have the cheek to use Dederick's Continnons Hay Press patent, without which the operation must stop to tie and remove the bale. Dederick has suits pending to enforce these patents, and will in due time prosecute every purchaser for $10,000 damages. Meantime he earnestly remonstrates against this high handed piracy of his property, and warns the public against being swindled into partnership in a steal with unscrupulous characters. Why join a steal for the benefit of thieves and receive an inferior machine, when the same price will purchase a good one of the owner. While Dederick bore the immense expense of introducing these improvements that are such a benefit to the hay interests of the country, these communists opposed him, and now propose to steal not only Dederick's patents, but the capital represented by its introduction into use. Send for free copies of patents in proof of this.

P. K. DEDERICK & CO., Albany, N. Y.

Improved Baldwin's American Fodder Cutter



The Simplest and Best! Only three Feed Gears! Cuts all kinds of feed, hay, straw, and corn-stalks with ease and rapidity. Power cutters fitted with our **Improved Safety Fly Wheel,** which secures perfect safety to the operator and machine. See large advertisement in Oct. No. of *Agriculturist.* Send for illustrated circular. C. PIERPONT & CO., Manufacturers, New Haven, Ct.

PRONOUNCED
the
BEST PLOW MADE
by the
Northern Ohio Fair of 1879,
State Fair of New York of 1879,
State Fair of Michigan of 1879,
and by the
Paris Exposition of 1878

when it competed with 187 other PLOWS, and received the GRAND GOLD MEDAL for being the BEST general purpose Plow in the world—an honor never before conferred upon a Hand Plow.

Is the MOST EASILY ADJUSTED and MOST PERFECT SCOURING PLOW ever invented, and the thousands that are in satisfactory use all over the land demonstrate the fact that no other CHILLED PLOW manufactured is equal in EVERY RESPECT to the "GALE."

For Circulars and prices, address

GALE MANUFACTURING CO.
ALBION, MICH.

THE
Herald of Health
FOR 1880.

It will give as its leading articles a series of twelve papers entitled

How to Have a Clear Head and Common Mind Troubles.

February subjects lie nearer the health, the happiness, and the progress of the race.

The following are some of the articles which will soon appear:

1. **Billiousness in Children.**
2. **Headaches of Adults.**
3. **Catarrh, its Cure.**
4. **Constipation and its Relief.**
5. **Prevention of Diphtheria, Scarlet Fever and Typhoid.**
6. **Malaria Diseases, Causes and Cure.**
7. **Sun Bathing, Air Bathing.**
8. **Salt-water Baths at Home.**
9. **Healthy Brains and Nerves.**
10. **Low Spirits.**
11. **Rearing Healthy and Beautiful Children, etc., etc.**
12. **How Women may be Well.**

Each Number will be worth the yearly price and save ten times its cost in ill health, for it will teach how to KEEP WELL and retain health to old age, rear healthful, happy children, as well as how to recover health without medicines.

Price $1.00 per Year.

SPLENDID PREMIUM.

Every subscriber sending $1.00 and 10 cents for postage, shall receive free a new book of over 200 pages, by MRS. BERTHA MYER, entitled

How to Govern Children.

This work is the best book of its kind ever written, and worth its weight in gold to any parent. Price $1.00.

Also just out:

Hygiene of the Brain and Cure of Nervousness.

By M. L. HOLBROOK, M. D.

"Get this book and read it, for it abounds in practical valuable knowledge."—*Chicago Inter-Ocean.*

PART I. CONTAINS:

How the Nerves Act.
Has Nervous Activity any Limit?
Nervous Exhaustion.
How to Cure Nervousness.
The Cure of Nervousness (*Continued*).
Food in Nervous Disorders.
Fifty Important Questions Answered.
What our Thinkers and Scientists Say.
Nervousness in Girls.
On Headaches.
Resting the Brain.
Hunting as a Remedy.
How to Banish the Blues.
Mental Hygiene for Farmers.
Recreation in a Work Shop, etc., etc.

Part II. contains 28 letters from distinguished persons, including farmers on their physical and intellectual habits.

Price, by mail, $1.50.

It and Herald of Health $2.00, without premiums; with premiums, $2.10. Samples, 10 cents,

SPECIAL OFFER.
$3.60 For $2.00.

We will send the **HERALD OF HEALTH,** the **AMERICAN RURAL HOME** (a weekly rural paper, price $1.50 a year), and **THE HOUSEHOLD MAGAZINE** ($1.10 a year), for $2.00. For $3.00 we will send the above and **HYGIENE OF THE BRAIN.** Add 10 cents for Premium.

Address **M. L. HOLBROOK,**
13 & 15 Laight St., New York.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from Page 50.

In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations are seldom repeated, as those who desire information on a particular subject can cheaply obtain one or more of the back numbers containing what is wanted.

Back numbers of the "American Agriculturist," containing articles referred to in the "Basket" or elsewhere, can always be supplied and sent post-paid for 15 cts. each, or $1.50 per volume.

The German Edition.—All the principal articles and engravings that appear in the *American Agriculturist* are reproduced in the German Edition. Besides these, there is a special department, edited by an eminent German cultivator. Our friends can do us a good service by calling the attention of their German neighbors and friends to the fact that they can have the paper in their own language, and those who employ Germans will find this Journal a most useful and acceptable present.

Bound Copies of volume 38, and of every previous volume back to Vol. XVI. (1857), neatly bound, with gilt backs, Index, etc., are supplied at $2 each (or $2.30 if to be sent by mail). See Publishers' Notes, 2d cover page.

Clubs can at any time be increased by remitting for each addition, the price paid by the original members; or a small club may be made a larger one at reduced rates, thus: One having sent 6 subscribers and $7, may afterwards send 4 names more and $3, making 10 subscribers for $10.00; and so for the various other club rates.

Terms to New South Wales, New Zealand, Australia, Africa, etc.—To several inquirers. Under the latest revision of the Postal Union Regulations the price of the *American Agriculturist,* (either English or German edition), including postage *prepaid* through, will be covered by 7 shillings sterling per annum. This applies to the above countries, and to all others embraced in the General Postal Union. The simplest mode of remittance is by Postal Money Orders, payable in London, to the order of Orange Judd Company. These can be readily cashed in N. Y. City at a slight discount, which the publishers will cheerfully pay. For Club rates, (postage included), see our second cover page, and reckon 22 cents to the shilling sterling.

Hens in Winter.—If eggs are expected during the winter months—and they ought to be—the fowls must be kept warm and well fed. They will not bear crowding, a fact that is too often overlooked. Hens are naturally active creatures, and must have room to run and exercise themselves. The house must be kept clean, and an abundance of fresh air and pure water provided; also a constant supply of oyster shells or bones, broken fine.

Packing Frozen Meat.—Meat that has been frozen, as is often the case with pork and beef killed at this season, should be thawed out before being put into the barrel, as the hard frozen meat does not absorb the salt as it ought, and otherwise would do.

Rolling Wheat After Sowing.—This is a good time of the year to observe the effect of rolling the wheat ground and making it smooth after the grain is sown. If a light snow, or even a moderate one, comes, followed by a wind, it is carried to the fence rows, etc., and lodged wherever it can get a foothold, and if the field is rolled smooth the surface of the ground will be left bare and exposed to the severe cold, and more especially to the destructive influences of sudden freezings and thawings that may follow. If the surface had been left rough, much of the snow would have remained in place about the roots of the plants, and served as a protection against "winter killing."

Milking.—The thoughtful dairyman knows the value of a good milker, and will have no others in his herd. Much of the complaint made by men who have recently bought good milch cows and been disappointed in them, is due to the change of the milker. Careless milking is a fertile source of loss in dairying. The milk should be removed as rapidly as possible to the last drop, and at regular hours. With careful milking, kind treatment of the cows in all respects is of course understood.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our record kept daily during the year, show at a glance the transactions *for the month ending Jan. 13th*, 1880, and for the corresponding period last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats*
25 d's *this* m'th	411,000	3,105,000	3,467,000	183,000	312,000	1,128,000
25 d's *last* m'th	526,000	6,127,000	4,036,000	589,000	602,000	916,000

SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
25 d's *this* m'th	316,000	18,570,000*	4,091,000*	159,000	408,000	1,234,000
25 d's *last* m'th	465,000	23,817,000*	5,902,000*	354,000	611,000	1,805,000

* Including sales for forward delivery.

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
25 days 1880..	411,000	3,105,000	3,467,000	183,000	312,000	1,128,000
23 days 1879..	315,000	2,249,000	921,000	68,000	137,000	405,000

SALES.	*Flour.*	*Wheat.*	*Corn*	*Rye.*	*Barley.*	*Oats.*
25 days 1880..	316,000	18,570,000	4,091,000	159,000	408,000	1,234,000
23 days 1879..	267,000	6,109,000	3,051,000	279,000	307,000	768,000

3. *Receipts at New York, Jan. 1 to Dec. 31.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
'79.	5,562,500	70,878,000	42,361,000	3,305,000	8,478,000	11,159,500	480,000
'78.	4,629,300	62,928,000	38,113,300	4,628,300	6,388,000	14,479,600	705,500

4. *Exports from New York, Jan. 1 to Dec. 31.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
'79.	3,634,400	61,538,900	35,319,700	3,941,600	147,900	521,400	393,150
'78.	2,630,400	55,019,400	27,440,800	4,184,850	1,518,800	3,658,900	476,200

5. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush	*Oats.* bush.	*Malt.* bush
Jan. 12, '80..	7,792,320	1,378,000	426,191	557,857	557,009	143,891
Jan. 14, '79..	3,429,571	1,729,857	572,670	908,425	922,332	91,447
Jan. 14, '78..	2,169,552	1,048,859	286,654	935,084	1,600,132	318,542

6. *Stock of Flour Here Dec 31.*

	1876.	1877.	1878.	1879.
Total, bbls.	275,900	400,000	372,000	398,000

CURRENT WHOLESALE PRICES.

	Dec. 12.	Jan. 13.
FLOUR—Super to Extra State	$5 40 @ 6 50	$5 00 @ 6 00
" Super to Extra South'n.	5 40 @ 9 00	5 00 @ 8 50
" Extra Genesee	6 25 @ 7 50	5 85 @ 7 25
" Superfine Western	5 40 @ 6 00	5 00 @ 5 60
" Extra Western	6 00 @ 9 25	5 50 @ 9 00
" " Minnesota	6 00 @ 9 00	5 75 @ 9 00
BUCKWHEAT FLOUR, ℘ 100 lbs	2 30 @ 2 65	2 10 @ 2 35
BUCKWHEAT, per bush	— @ 65	— @ 62
RYE FLOUR, Superfine	4 85 @ 5 50	5 00 @ 5 40
CORN-MEAL	2 75 @ 3 35	2 60 @ 3 30
CORN-FLOUR, per bbl	4 20 @ 4 50	4 00 @ 4 50
OAT MEAL, ℘ bbl	5 25 @ 7 25	5 00 @ 7 00
WHEAT—All kinds of White	1 42½ @ 1 62½	1 35 @ 1 50
" Red and Amber	1 40 @ 1 62½	1 15 @ 1 55
" Spring	1 15 @ 1 50	— @ —
CORN—Yellow	65 @ 70	58 @ 70
" White	65 @ 70	58 @ 70
" Mixed	64 @ 66½	56 @ 60
OATS	48 @ 55½	46 @ 51½
RYE	90 @ 97	92 @ 95
BARLEY	75 @ 1 10	70 @ 1 08
HAY—Bale, ℘ 100 lbs	45 @ 95	60 @ 95
STRAW, ℘ 100 lbs	40 @ 85	50 @ 95
COTTON—Middlings, ℘ ℔	13¼ @ 13½	12⅝ @ 12⅞
HOPS—Crop of 1879, ℘ ℔	30 @ 43	30 @ 40
" " 1878, ℘ ℔	7 @ 20	7 @ 18
" olds, ℘ ℔	4 @ 10	7 @ 12
FEATHERS—Live Geese, ℘ ℔	37½ @ 52½	40 @ 55
SEED—Clover, West. & St. ℘ ℔	8½ @ 10¾	8¼ @ 10¾
" Timothy, ℘ bushel	Nominal.	2 40 @ 2 75
" Flax, ℘ bushel	Nominal.	1 65 @ 2 00
TOBACCO, Kentucky, &c., ℘ ℔.	3 @ 14	3½ @ 14
" Seed Leaf, ℘ ℔	6 @ 35	6 @ 40
WOOL—Domestic Fleece, ℘ ℔	32½ @ 55	30 @ 56
" Domestic, pulled, ℘ ℔	26 @ 52½	30 @ 55
" California	13 @ 40	18 @ 42
TALLOW, ℘ ℔	6⅝ @ 7	6⅝ @ 6¾
OIL-CAKE—℘ ton	33 50 @ —	35 00 @ —
PORK—Mess, ℘ barrel	12 50 @ 12 85	12 75 @ 13 00
" Extra Prime, ℘ barrel	— @ —	10 50 @ —
BEEF—Extra mess	11 00 @ 11 50	11 00 @ 11 50
LARD, in trcs. & bbls, ℘ 100 ℔	7 60 @ 8 35	7 90 @ 8 40
BUTTER—State, ℘ ℔	16 @ 37	18 @ 37
" Western, poor to f'cy, ℔.	15 @ 37	14 @ 37
CHEESE	4 @ 13¼	9 @ 14
EGGS—Fresh, ℘ dozen	16 @ 26	12 @ 18
POULTRY—Fowls, ℘ ℔	7 @ 12	6 @ 13
" Chickens, ℘ ℔	7 @ 12	5 @ 16
" Roosters, ℘ ℔	3½ @ 5	4 @ 5
Turkeys—℘ ℔	6 @ 12	8 @ 13
Geese, ℘ pair	1 00 @ 1 50	80 @ 1 25
Geese, ℘ ℔	— @ —	5 @ 10
Ducks, ℘ pair	40 @ 70	45 @ 80
" ℘ ℔	8 @ 14	8 @ 13
RABBITS, ℘ pair	30 @ 35	20 @ 25
HARES, ℘ pair	35 @ 40	20 @ 30
DUCKS, Wild, ℘ pair	20 @ 2 50	25 @ 3 25
QUAIL, ℘ dozen	1 50 @ 2 25	1 25 @ 1 75
PARTRIDGE, ℘ pair	20 @ 50	40 @ 75
PIGEONS, ℘ doz	2 00 @ 2 50	70 @ 1 00
GROUSE, ℘ pair	60 @ 1 00	75 @ 1 12½
VENISON, ℘ ℔.	9 @ 12	8 @ 12
APPLES, ℘ barrel	1 50 @ 3 00	1 75 @ 4 00
PEARS, ℘ bbl	2 00 @ 4 00	— @ —
POTATOES, ℘ bbl	87 @ 2 00	1 25 @ 2 00
" Sweet, ℘ bbl	2 00 @ 3 25	2 75 @ 3 25
TURNIPS ℘ bbl	75 @ 1 00	75 @ 87½
BEANS—℘ bushel	1 80 @ 2 15	1 45 @ 1 95
PEAS—Canada, in bond, ℘ bu	— @ 85	— @ 86½
" new, green, ℘ bag	1 75 @ 2 25	1 80 @ 1 85
BROOM-CORN	4 @ 9	4 @ 9
CARROTS, ℘ bbl	75 @ 1 12½	75 @ 1 00
BEETS, ℘ 100 bunches	75 @ 1 00	87½ @ 1 25
CABBAGES—℘ 100	3 50 @ 5 00	4 00 @ 7 00
ONIONS—℘ bbl	2 50 @ 4 00	2 25 @ 4 50
CRANBERRIES, per bbl	4 50 @ 7 00	6 00 @ 9 00
SQUASH, ℘ bbl	75 @ 1 50	1 12½ @ 1 50
CELERY, per dozen bunches.	75 @ 1 00	75 @ 1 00

With the opening of the new year, business in Bonds and Stocks has been quickened by the restoration of ease in Money, which had been quite stringent through the last few weeks in December, chiefly because of the preparations, then in progress, for the 1st of January interest and dividend disbursements, the aggregate of which has been very liberal, thus reflecting, in part, the successes of the past year, in the industrial and commercial lines.—the promise of which for the year now fairly entered upon is viewed as even more encouraging.... Produce and Merchandise interests have shown a fair degree of activity, for the season. Metals have been the prominent feature, in the way of renewed and very decided buoyancy in values, through the unusually extensive operations, especially in Iron, Iron and Steel Rails, and Tin, for prompt and forward delivery, closing in favor of sellers. Hardware has been attracting more attention. Boots and Shoes have had an increased call for Spring styles. Hides have been less freely dealt in but have not varied much in price. Leather has been quite brisk; Sole having met with a ready sale, but at some slight reductions in quotations, under more liberal offerings. Seeds, Hops, Hay, and Straw have been very moderately sought after. Dry Goods have been in fair request, and held with confidence. Naval Stores have been more active and quoted higher, but closed less firmly. Petroleum has further yielded in price, on more urgent offerings, without leading to remarkable animation in the dealings, for early or future delivery....Provisions have been in more demand, largely in the speculative line, on a fluctuating market, closing, as a rule, with more firmness. Lard has recently attracted more attention from shippers, particularly Western Steam, for the Liverpool market. Butter has been in good request at generally full figures. A livelier inquiry has been reported for Cheese, which has been advanced rather sharply....Cotton has been fairly active, almost wholly in the option line, but at variable prices, leaving off with an upward tendency....A fair demand has been reported for Wool, prices of which have been remarkably well supported, in instances showing a gain, since our last, and closing quite firmly, on comparatively limited supplies, which, it is apprehended, will be found inadequate to meet the requirements of consumers, up to the incoming of the next clip....Tobacco has been quoted steadier, on a freer movement, in good part for shipment.... In the Breadstuff line, a noteable reaction has occurred, since our last, from the buoyancy of the preceding month, values suffering serious depression, through the falling off in the export demand, as reflecting the heaviness in the foreign markets, the extraordinary accumulation of stocks on the seaboard, and in the interior, (making what are called the visible supplies of Wheat, —embracing the hoards at lake ports, in transit, and on the seaboard—at latest dates, 29,620,000 bushels;—of Corn, 11,500,000 bushels; of Rye, 1,136,000 bushels; of Barley, 4,334,000 bushels; and of Oats, 3,074,000 bushels, against, on December 13, an aggregate of 28,688,500 bushels Wheat, 10,079,400 bushels Corn, 1,162,000 bushels Rye, 4,668,600 bushels Barley, and 2,672,200 bushels Oats;) and the baneful influence of speculative manipulation, which has arrested the outflow of produce from our ports, and led to a further material decline in ocean freights, which on Grain fell to 3d. per bushel by steam for Liverpool (though rallying near the close to 4d.), and 4s.@4s.3d. per quarter, of 480 lbs., by sail for Cork and orders, and proportionately to other destinations. Home trade dealings have also diminished in value. At the close, the advantage, almost throughout the market, was unmistakably in favor of buyers, especially in the instances of Wheat, Oats, Rye, and Flour. Wheat was pressed for sale at the extreme close, and Winter grades, under the pressure, receded, on Monday, 12th of January, 2@3 cts. a bushel on an active but feverish market, leaving off with a downward tendency. The purchases of Wheat, as reported on that day, were to the aggregate of over 1,450,000 bushels, of which only about 140,000 bushels were for early delivery; the bulk of the transactions having been in the option line, and these options exclusively on the favorite grades of No. 1 White and No. 2 Red, the February and March deliveries now meeting with most favor, as postponing pay day to the furthest, and thus extending the privileges of speculative operators. Spring Wheat has recently entered to an unusually limited extent into the daily sales,—the views of buyers and sellers having been too wide apart to admit of activity. In sympathy with Wheat, Flour, Rye, and Oats gave way in the latest dealings, and closed weak. Corn participated in the reaction, but suffered less severely, and for early delivery, hardened a little, in the final movements, which were, in good part, on the export account.

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Dec. 15	10,187	350	1,728	23,964	32,271
Dec. 22	12,814	300	1,330	29,797	34,261
Dec. 29	9,463	250	1,016	19,154	25,335
Jan. 5	11,039	151	1,056	22,804	26,411
Total for 4 *Weeks*	43,503	1,051	5,130	100,719	118,278
do. *for prev.* 4 *Weeks*	41,066	1,253	6,575	123,626	182,361

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week	10,878	263	1,282	25,180	29,569
do. do. *last Month*	10,266	314	1,613	30,906	45,590
do. do. *prev's Month*	12,736	272	3,251	39,443	44,248

Prices for beeves the past four weeks were as follows:

WEEK ENDING	*Range.*	*Larger Sales.*	*Aver.*
Dec. 15	6½@11¼c.	8½@ 9½c.	9 c.
Dec. 22	6½@12 c.	8½@ 9½c.	9 c.
Dec. 29	6½@12 c.	8¾@ 9¾c.	9¼c.
Jan. 5	6 @11 c.	8½@ 9½c.	9 c.

Beeves.—The market opened dull and unpromising, and the foreshadowing of a poor business was fully realized. A slight improvement occurred when the Christmas cattle came in and lifted up the general run of the market, but this was soon lost, and dullness again ruled. The best price and highest estimated average was for some Kentucky premium steers which brought 12 cents per lb. on 60 lbs. to the 100. The range for the last day of the month was lower, ordinary steers sold per 7½ @ 8½ to dress 55 lbs.; good to choice at 8¾ to 10½c. for 56 to 57 lbs.; extra brought to 11 @ to dress 57 lbs. The export business has been quite brisk, from 6,000 to 8,000 quarters being shipped weekly, with about 2,000 carcasses of mutton and some hundreds of dressed hogs. The total receipts for 1879 have been 568,681 cattle; 8,231 cows; 168,340 calves; 1,540,180 sheep and lambs, and 1,711,094 hogs....**Cows.**—Receipts have been lighter and prices lower; trade being dull with a slow demand. Prices range from $30 to $50 per head for poor to good, and $60 to $65 for extra milkers....**Calves.**—A good demand with decreasing supply has sustained the market and prices have been strong, and advancing for grassers, which sold for 2½@3 cts. per lb. live weight; milk fed calves at 3¼@4½ cts. per lb., and veals at 5@8 cts. per lb. for fair to good, and 8½ cts. for extra....**Sheep and Lambs.** The market has ruled strong all through the month with advancing prices. Sheep have sold at 4¾@6 cts. per lb. live weight for common to good, and 6¼@6¾ for choice ewes and extra wethers. Lambs have gone off readily at 6½@7½ cts. per lb. At the close a strong feeling prevailed....**Swine.**—A good demand and firm prices have marked the month's business. Live hogs have sold for 4¾@5⅞ cts. per lb., with a firm market at the close.

The Horse Market.—The business of the past year has been larger and more active than at any time since 1874. The supply of horses has also been better, and shippers have had a better margin for profits. Heavy draft horses have been most in demand; this is a straw which shows the direction of the current and which should be noted by breeders. Fine coach horses have been competed for by both native dealers and exporters, and have met with ready sale. This is another valuable indication. Common horses have been neglected except by local farmers and have suffered as they always must do in competition with used-up car horses which go into the country at low figures on the chance of recuperation. The year's exports reach to 2,461 horses and 3,002 mules, many of which went to South Africa for the British army. The imports were 47 Normans from France; 15 Throughbreds from England; 65 Shetland and 4 Norway ponies. Business opens quietly for the new year with moderate demand and low prices, except for fine stock.

Prices of Feed.

Cotton-seed meal,	per ton.	$30.00
Linseed-cake meal	"	37.50
Middlings	"	24.00
Bran	"	23.00
Corn-meal	"	23.00

Prices of Fertilizers.

Nitrate of Potash (95 per cent.), per lb.	9 @9½c.
Sulphate of Potash (potash 44 per cent) per lb.	3½@4 c.
do. do. (potash 27½ per cent) per lb.	1½@1⅝c.
German Potash Salts (potash 12 to 15 p. c. p. ton.	$15.00@18.00
Muriate of Potash (potash 50 per cent), per lb.	2 @2⅛c.
Nitrate of Soda, per lb.	4⅝@5 c.
Sulphate of Ammonia (25 per cent.), per lb.	4c.@4¼c.
Dried Blood (ammonia 13 per cent) per ton	$40.00@45.00
No. 1. Peruv. Guano 10 p. ct. ammonia, standard, ℘ ton..	$56.50
do. do. Lobos, do. do. do.	47.50
do. do. guaranteed, ℘ ton, cargo K	56.00
do. do. rectified, per ton, 9.00 p. c.	65.00
do. do. do. do. 3.40 p. c.	51.00
Soluble Pacific Guano, ℘ ton	45.00
Excelsior Fertilizer Works, Fine Ground Raw Bone,	55.00
Mapes' Complete Manure (clay soils) per 1,000 lbs.	25.00
do. do. do. (light soils) per 1,000 lbs.	25.00
do. do. do. "A" Brand, (wheat) ℘ 1,000 lbs.	20.00
do. Bone, strictly pure, meal .....per ton	42.00
do. do. do. medium...... do.	36.00
do. do. do. dissolved..... do.	42.00
do. Fruit and Vine Manure........... do.	35.00
Stockbridge Rye Manure, per ton	45.00
" Wheat do do	45.00
" Seeding Down Manure, per ton	40.00
Bowker's Wheat Phosphate, per ton	40.00
Baugh's Raw Bone Phosphate, per ton	33.00
Baugh's Manure for Tobacco and Grain, per ton.	45.00
Walton, Whann & Co.'s Raw Bone Phosphate	40.00
Gypsum, Nova Scotia, ground, per ton	7.50

Killing Hogs.—This work should be done in as quiet a manner as possible, that the animals may not become excited—in a fever heat—just before being killed. Avoid running or driving them rapidly for any distance, as the quality of flesh is thereby injured.

Some Dairy Statistics.—There are over 13,000,000 milch cows in the United States, from which over 350,000,000 pounds of cheese and 960,000,000 pounds of butter were made during the past year.

The Pear-Leaf Blister.—This wide-spread disease of pear trees is now considered as the result of the attacks of a minute insect, a mite called by a German naturalist *Typhlodromus pyri*. Prof. Burrell, of the Illinois Industrial University, has made a special study of this subject, and finds that the mite is peach-colored, with only four legs, and hundreds of them are found in a very small space within the diseased tissue of the leaves. The remedy suggested is to cut back the last year's wood and burn the parts removed; this is sure death to the mites which are crowded between the bud scales.

Eclipses for 1880.—There are to be six, namely: (1) A total of the sun, Jan. 11, visible through portions of Utah, Nevada, and California. (2) Total of the moon, June 22, invisible in eastern portions of the United States. (3) Annular eclipse of the sun, July 7, invisible in North America. (4) Partial of the sun, Dec. 1, visible only in the Southern Hemisphere. (5) Total of the moon, Dec. 16, invisible in the eastern United States. (6) Partial of the sun, Dec. 31, visible in eastern United States. Thus the last day of the year brings the majority of our people a partial eclipse of the sun, and the only visible one.

The Ice Harvest.—The time for filling the ice-house will soon be over, and the harvest of ice should be made at the earliest day. To those that have never had the convenience, nor practised the economy, of a supply of ice for the hot months of summer, let it be said that it pays, and a house built now will not be too late.

Salt Marsh.—"P. W. H.," Aransas Co., Tex. Unless you can, by means of tide-gates or otherwise, control the inflow of salt water, you can make no valuable improvement in the quality of the grass produced. If the water can be excluded, Orchard-Grass, Timothy, and other "tame" grasses may be sown after the rains have freshened the surface. If this can not be done, encourage the natural grasses of the marsh by removing brush and other plants than grass, so far as practicable, for the natural growth is of far more value than is generally supposed, not only for bedding, but for feeding.

The Western N. Y. Horticultural Society.—There is no Society whose meetings we have a stronger desire to attend, or whose published proceedings—always brought out promptly, by the way—we read with more interest than this. Its meetings are held at Rochester, one of the great horticultural centers of the country, and when the cultivators from all the western parts of the State meet those belonging in that city, they form a gathering that, for practical knowledge of the subjects they discuss, can hardly be equalled elsewhere in the country. The meeting this year was held after this number went to press (Jan. 28th), but it is safe to say in advance that the proceedings were worthy of the occasion, it being the 25th anniversary of the organization of the Society; a quarter centennial celebration, demanding an extra effort on the part of the members.

Where can Cranberries be Grown?—"A. G. S.," Fayette, Iowa, has a piece of springy ground on the banks of a river, usually overflowed in spring, and is wet most of the season, and thinking that Cranberries may be grown there, asks us how to set about it. We can best answer this and other similar letters by giving the essentials in Cranberry Culture. The Cranberry plant, or vine, will *live* almost anywhere when once established, but for its profitable culture, there are certain essentials, in the absence of either one of which no cranberry-grower would undertake it. The soil must be either peat or muck, so situated that it may be drained for 18 inches below the surface, and an abundance of water at hand so situated that the ground may be flooded to the depth of some inches at once—added to these there must be at hand a supply of pure sand, enough to cover the whole surface of the bed for an inch or two. Without these success can not be hoped for, and it is not always realized when these are all present, as there are various accidents and troubles that may defeat the cultivator.

Poplar Sprouts.—S. Lea, writes that at the base of his poplar trees, there are some shoots, and he would like to plant them if they will grow, but they have no roots. He wishes to know what to do and how to do it. A poplar will grow almost as well without roots, as with. Cut them any time before the buds start, as small as a lead-pencil, or as large as the arm, and six inches or six feet long, set them out or drive them in where they are wanted, and they will attend to the rest of the work.

Cannot Tell.—"A Reader" asks why the vine of the bean turns one way and that of the hop in the opposite direction in their twining around the supports. Of course it is not very satisfactory to say it is the nature of each to climb in its own way—but that is about as far as we can go. Why will a chick run towards the hen that clucks for it, though it be for the first time, and the hen is not in sight? There are many things in nature that are beyond any exact explanation.

Pleuro-Pneumonia has broken out in New Hampshire, and the Governor has appointed a Board of Commissioners to investigate the appearance of the disease. A number of cattle have died at Haverhill in that State, and grave fears of its spreading are entertained.

Corn Nubbins for Kicking Cows.—There is an old farmer in Vermont who buys all the kicking cows he can find, and cures them with kind words, abundant use of the currycomb, and feeding of corn nubbins. We are at a loss to decide which of the three agents is the most important, but think there is more in the first two than many may think. Harsh words and blows would more than overcome the soothing influence of the nubbins. Even cows can be influenced by example.

Pressure on a Cistern.—"T. B. P." If a cistern is empty, and the ground full of surface water, the pressure will certainly be considerable, and may be dangerous, if the cistern is not well constructed. If it is made of the shape of half an egg, the pressure will not injure it, that being the strongest possible form. If it is round with a flat bottom, the sides will be sound but the floor may be burst in. In such cases it would be well to provide against the danger by making the cistern of the strongest shape, and laying the bricks in the most substantial manner.

The Bradshaw Plum.—"J. P. W.," Fennville, Mich., asks us to give the merits of this plum, as it (the tree we suppose), is being offered for sale in his section. The Bradshaw is a fairly good, large, blue plum, ripening in August. In making a selection of 10 varieties, in the order of quality, we should not include the Bradshaw. In selecting 10 for profitable market culture, this would be included, and stand towards the head of the list. If offered as being "Curculio proof," or "Black-Knot proof," or remarkable in any other way, it is misrepresented.

Fertilizer for Cotton.—"J. R.," Kaufman Co., Texas. Peruvian guano is one of the best fertilizers for cotton. There are special manures made for this crop by the manufacturers of fertilizers, whose addresses may be found in the advertising columns; these fertilizers are cheaper than guano, and sometimes more effective, being richer in potash, the element that is most needed.

Book on Cotton Culture.—"R.," Lawrence, Texas. The most modern information about cotton culture is contained in the Manual of Agriculture by E. G. Wall, of Mississippi. The culture is very simple, and a whole book is hardly necessary to tell all the story.

Chalk and Water in Milk.—The daily city papers often call attention to the quality of the milk furnished to city customers. There is abundant reason for doing this, and they can not too frequently insist, that milk must be furnished just as it comes from the cow. But these articles lose much of their force by implying, indeed some of them directly asserting, that a mixture of chalk and water is served in place of milk. This is absurd; the most skilled manipulator can make no mixture of any form of chalk, that will be no more dense than ordinary milk, from which the chalk will not completely settle, upon standing for a few hours. We doubt if there was ever a pint of milk sold in N. Y. City, in which chalk was used as an adulteration. In London, milk and other adulterations were carried to such an extent, that Parliament had the matter investigated some years ago. Doct. Hassall, who was officially connected with these examinations, and has probably examined more samples of milk than any other person, says of chalk and starch in milk, while he admits that they may be very rarely used, that "It has not happened to ourselves to meet these substances in milk." Wanklyn, also of London, in the most recent work on the "Analysis of Milk," says nothing about the occurrence of chalk. The fact is, the most serious adulteration of milk is with water. Besides the addition of water, milk is impoverished by the abstraction of cream. These two, the taking off of cream, and putting in water, are the worst that happen to city milk, and these are bad enough. It diverts attention from these real troubles, to talk about improbable, if not impossible "chalk and water."

Gold and Silver.—The United States produced $32,529,920 of gold and $38,623,812 of silver during the year 1879. Nearly the whole of the gold, except 4 millions used in the arts, has gone into employment as money, and about two-thirds of the silver has passed to the mint. In addition to the production, we have imported $75,000,000 in gold, while the exports of it have been almost nothing. It has been a golden year for us.

Mending Rubber Boots and Shoes.—A number have asked how rubber boots and shoes could be patched. Of course any cement used for this purpose must be elastic, and the only thing suited to the work is a solution of rubber itself. Unfortunately, rubber is soluble in but very few liquids, and these are either costly or dangerous to have about on account of their volatile and inflammable character. Probably the best solvent of rubber is Bisulphide of Carbon. (See "A Wonderful Liquid," page 453, November last.) We dislike to publish a recipe that we have not tried, and rarely do so; the following, commended for patching rubber, we have not used for that purpose, but have used it for cementing other articles, and have reason to think it will answer for that. Take one part of Rubber, three parts of Gutta-Percha, and eight parts of Bisulphide of Carbon. The Rubber and Gutta Percha must both be pure; manufactured or vulcanized will not answer; both should be cut fine and put with the Bisulphide in a wide-mouthed bottle with a tight cork. They will require a day or so to dissolve, and will need thorough stirring to make a smooth mixture. Recollect that the Bisulphide and its vapor will take fire very readily, and the greatest caution must be used. Moreover, it smells horribly. The rubber to be joined must be perfectly free from grease, and the parts coming in contact should be rubbed with fine sand-paper. When the patch is put in place it should be held there, by winding a string about it, or in any other manner that will keep it under pressure until the cement is hard.

A Shell in a Tea-Kettle.—"H." says in a visit to the shore of Long Island Sound, he saw the housekeeper put a clean clam-shell or oyster-shell in her tea-kettle to prevent a crust from forming on the inside, and wishes to know if it isn't "an old woman's whim."—Not at all—but founded upon correct scientific principles. Some hard waters deposit, on being boiled, the Carbonate of Lime to which their hardness is due. In time this gradually accumulates and lines the interior of the tea-kettle; we have seen such a crust two inches thick. A shell, which is Carbonate of Lime, is placed in such water, when the water is heated the Carbonate of Lime it contained is deposited; it is in accordance with "the nature of things" that its minutely divided particles should aggregate themselves upon the shell, which is of the same material as itself, rather than upon the smooth iron surface of the kettle, thus keeping the kettle clean.

Treatment for Garget.—"F. S. C. H.," Lawrence, Mass. Garget consists of congestion of the udder, and it is not always caused by overfeeding. Sometimes it may result from a poor condition, and often occurs in poorly fed cows from want of sufficient vigor to control the circulation evenly. The disease results also from cold, excessive exercise, bruises, lying upon cold ground or floors without sufficient bedding, nervous excitement, or any disorder of the circulation which may throw undue pressure upon the glands of the udder. One-quarter or the whole of the udder may be effected. Thus it is readily seen that a specific remedy that will meet all cases can not be given. The cause must be discovered and the appropriate remedy provided. Generally, there is fever, and a dose of 12 ounces of Epsom Salts will tend to reduce that and lead to a recovery; the Salts will also act as an alterative upon the digestive organs, and will be useful in this case also. Accompanying remedies should be bathing the udder with warm water, injecting a solution of Soda to dissolve the curdled milk, or applying Iodine Ointment, which may be had at any drug store, externally to assist in absorption.

Agriculture in France.—The French Legislature has made the study of agriculture one of the regular branches to be taught in her public schools. A familiarity with the growth of crops, etc., is seen by that Republic to be as important as the fact that the earth is nearly a sphere, or the sun is between 93 and 95 millions of miles away from us. But where do they find competent teachers?

German Ivy.—Nothing in the way of living plants adds so much to the cheerfulness of a room as healthy vigorous climbers; and all things considered—ease of culture, rapidity of growth, grace and delicacy of form—the German or Parlor Ivy may well take a leading place.

Celery.—The complaints that come to us of the failure of celery to keep this winter show that the trouble is general. "W. H. B.," Waterbury, Ct., thinks that his trouble was due to late planting, but as he does not say when his was set out, we can not judge. But in general it is not necessary to go beyond the unusually warm weather to find a cause. Celery will grow at a very low temperature, and the weather has been for weeks at a time so mild that the plant would grow. Growth in the trenches is fatal, for its roots being out of the ground, whatever growth takes place at the center, must be at the expense of the other stalks, which become hollow and flabby. Besides this, in such a mass of vegetable matter, the warm weather will soon induce decay. Lovers of celery can congratulate themselves that statistics show that such a winter as we are now having is rare.

Initials in some cases, will answer instead of full names, but not in the U. S. Post-Office. Had we written out a rule, that we were requested to send "by letter," placed it in an envelope and directed it to "H. B. J.," Dayton, Ohio, it is very likely that it would be in the Dead Letter Office. No doubt the writer of the letter, signed only by the above initials, thought we were not very obliging to refuse him a small favor, and we hope he will now learn why we were obliged to do so. "A. C.," of "Stmga," will also learn why his postal had no reply. By aid of an imperfect post-mark, we could make out that the place was St. Marys, Ga., but as there was nothing to help us make out the A. C., we were unable to answer.

Steel Calked Shoes.—If horses fail to stand in slippery places it will be because their owners fail to provide them with some of the several excellent devices to aid them. The Forged Steel Calk Horse Shoe, made by the Bryden Horse Shoe Co., has several points to commend it. The toe calk is very long, and with the others so placed as to give an even bearing to the foot. The inside of the shoe is of such a form as to prevent stones and other matters from catching in it, and the shape of the crease shows excellent workmanship and attention to details. The list of those who have used the shoe with approval includes the names of some of the eminent horse owners in the country.

Coloring Butter and Cheese.—"G. T. S." The coloring of cheese, to meet the notions of certain markets, is very common; to color hntter in winter, sufficiently to rcstore the lacking color, is regarded as legitimate by some of those who make the highest priced product. So long as a perfectly harmless vegetable coloring matter is nsed no harm can come of it. The color used is Annatto in some form; this is prepared from the pulp that surrounds the seeds of a South American shrub or small tree. The seeds are pnt into water and fermented, the liquid is poured off and evaporated to a pasty mass, abont the consistence of putty; this is made into rolls, covered with some kind of leaves, and sent to market in baskets. Annattoine is the coloring principle separated from annatto, and is in a much more concentratcd form. Annatto is sometimes nsed for dyeing cotton, but the color is not very fast: its chief consumption is in the dairy, and though the amount nsed by each one is small, the aggregate is large. The principal importer is Mr. L. E. Ransom, of New York, who also prepares it in the form of a butter color ready for use. There seems to he a number of methods of writing the name: annatto, anatto and arnotto being used, and sometimes it is called roucou.

Catalogues Received.

SEEDSMEN.

Benson, Maule & Co., No. 223 Chnrch Street, Philadelphia, Pa., send an illustrated list of farm, garden and flower seeds, implements, etc.

B. K. Bliss & Sons, No. 34 Barclay Street, New York, give their catalogue a qnaint exterior in Japanese style. The interior shows the usual nnmber of novelties in vegetables and flowers.

Wm. E. Bowditch, 645 Warren Street, Boston, Mass., sends his wholesale list and retail flower seed catalogne.

Francis Brill, Mattituck (L. I.), N. Y.—Wholesale list of seeds grown by himself.

W. Atlee Burpee & Co., No. 221 Church Street, Philadelphia, Pa., send their "Farm Annnal," which, besides hcing a catalogne of seeds of all kinds, includes stock and implements.

A. D. Cowan & Co., No. 114 Cbambers Street, New York, send a very full, neat and clear list of farm and garden seeds and appliances.

D. M. Ferry, Detroit, Mich.—The full and profnsely illustrated list of what is said to be the largest seed housc in the world, gives views of their new store, the floors of which have an area of nearly five acres!

L. W. Goodell, Amherst, Mass.—Illustrated list of seeds, bulbs and flowers.

Henry Nungesser, No. 83 Avenne D, New York.—Wholesale list of grass and forest tree seeds.

Plant Company, St. Louis, Mo.—Very full in seeds of all kinds. An Almanac, a Gardener's Calendar, and useful garden instructions—a treatise as well as a catalogue.

J. B. Root & Co., Rockford, Ill. It keeps up its interest in giving pleasant talks about garden matters.

Isaac F. Tillinghast, La Plume, Lackawanna Co., Pa., makes of his catalogne a quarterly called "Seed Time and Harvest." The first nnmber promises well.

E. Wyman, Jr., Rockford, Ill.—Full and neat, with sensihle directions for cnltnre.

Peter Henderson & Co., No. 35 Cortlandt Street, New York.—As usual. this bears the title "Everything for the Garden," and as it includes Peter Henderson's plant list, its title indicates the contents. Richly illnstrated.

Nanz, Neuner & Co., Louisville, Ky.—A full and illnstrated list of seeds, bnlbs, plants, etc.

NURSERYMEN.

J. L. Dillon, Bloomsbnrg, Pa.—Small fruits, with directions for culture.

Leslie & McCune, Ipava, Fulton Co., Ill.—General list of orchard and small fruits and evergreens.

J. R. Long, Colnmbia City, Ind.—Small fruits.

J. D. Mosby & Bro., Richmond, Va., at the Richmond Nurseries, offer a full stock of fruits, inclnding a number of varieties originating in the State.

J. F. Noerr, Oswego, N.Y.—The leading Strawberries.

E. & J. C. Williams, Montclair, N. J.—Small fruits, ornamental stock, seed potatoes, etc.

FOREIGN CATALOGUES.

N. L. Chrestensen, Erfurt, Prussia.—Dried flowers, dyed and other grasses, and winter bonqnets.

David Clarke, Brishane, Queensland, Anstralia.—Qnite a volume of seeds, trees, plants, implements, etc.

MISCELLANEOUS.

E. F. Brockway, Ainsworth, Iowa.—Poland China Hogs, Ponltry, with artichokes and chufas to feed them.

A. & T. Brown, 57-61 Lewis Street, New York.—Shafting, pulleys, etc. Excellently illnstrated.

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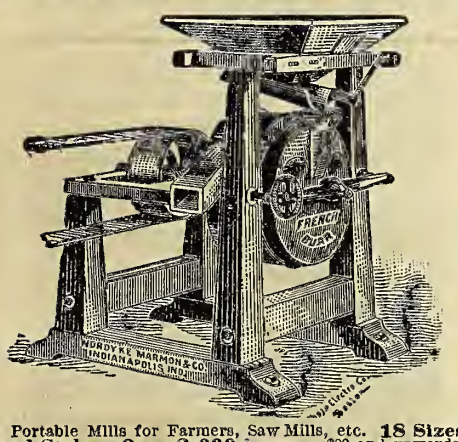

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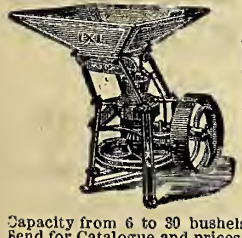

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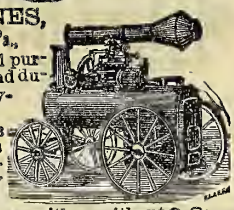

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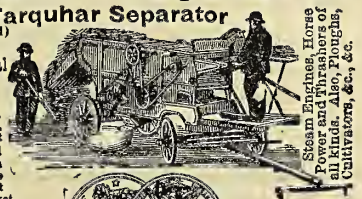

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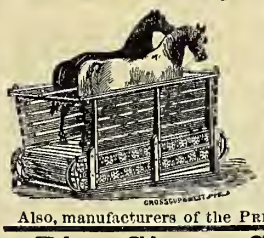

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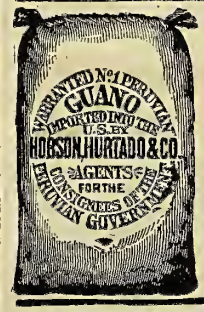

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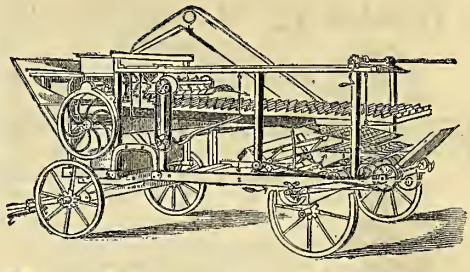

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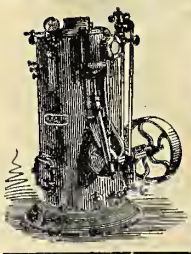

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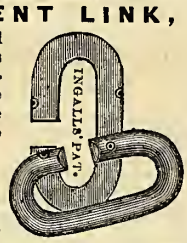

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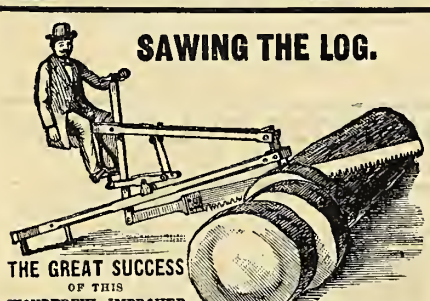

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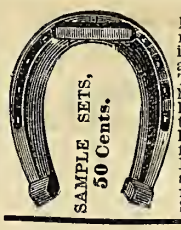

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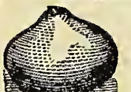

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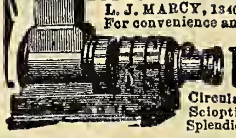

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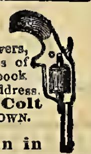

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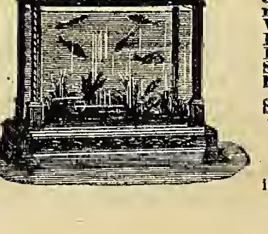

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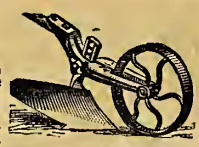

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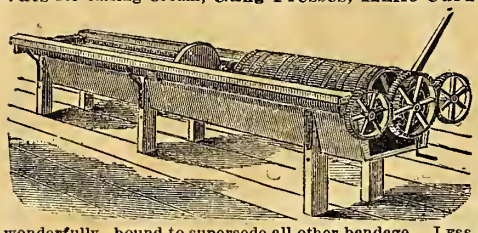

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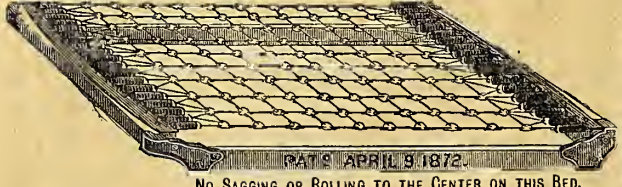

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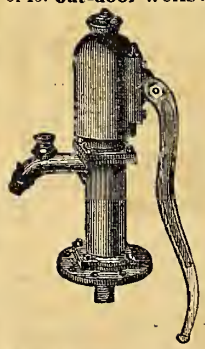

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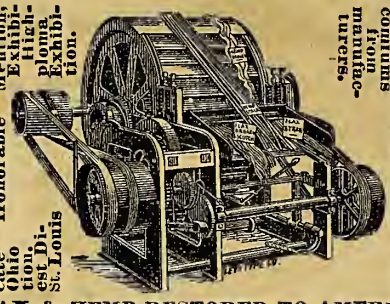

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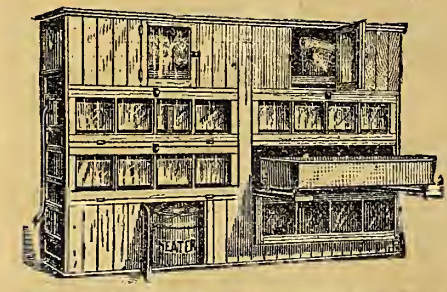

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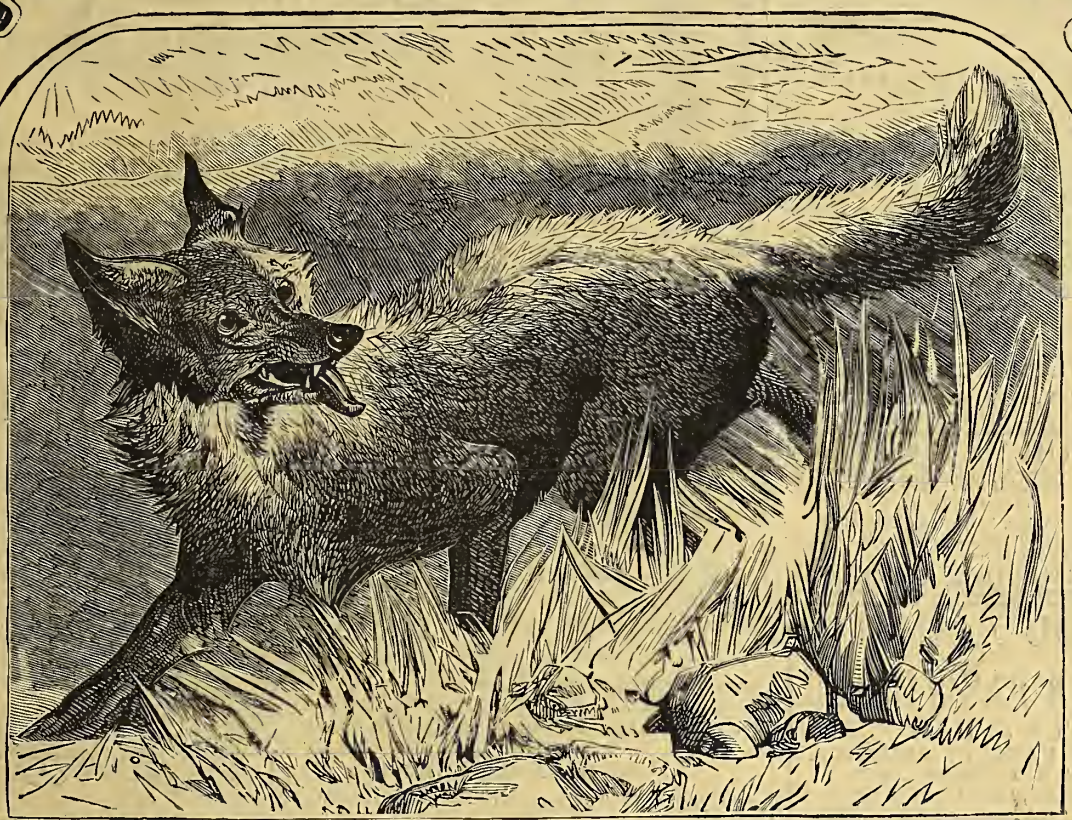

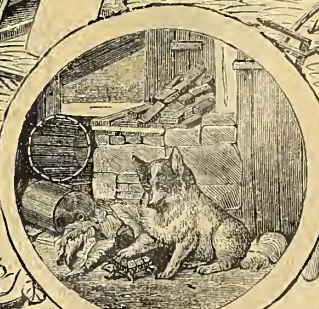

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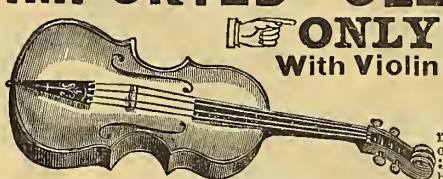

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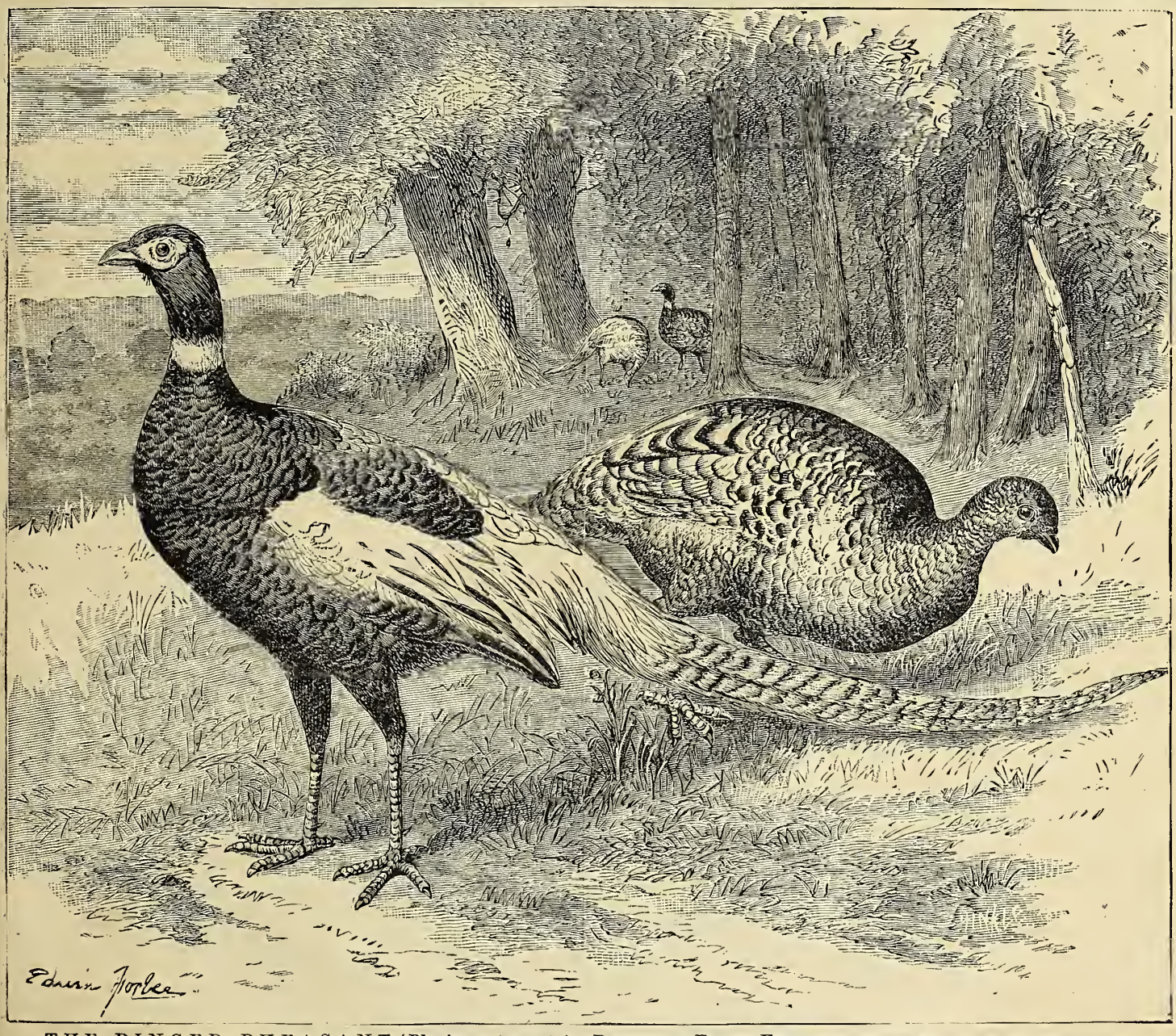

THE RINGED PHEASANT (*Phasianus torquatos*).—DRAWN BY EDWIN FORBES.—*Engraved for the American Agriculturist.*

The strict preservation of game in England has its advantages, though a large share of the people think it a hardship. Still only in that, and other countries, where every one can not go about shooting everything that flies, is it possible to have such birds as are shown in the engraving—not only have them, bnt in great abundance. The Phcasant occupies a place midway between poultry and game. It can only be domesticated with considerable difficulty, and even when confined in an aviary, will destroy its beauty in its efforts to escape; yet it is kept in its present plenty by the aid of the poultry keeper, great numbers of pheasant's eggs being annually hatched by common hens, and the young, when large enough, allowed to run wild. Though we speak of the *English* Pheasant, the bird is not a native of England, but comes from the ancient Asiatic province of Colchis, now known as Caucasus, having been brought to England so long ago that the tradition is lost. Besides the common Pheasant, with its rich colors of brown, green, purple, and blue, there is the Ringed Pheasant from India and China, and chiefly distinguished from the other by a white ring that almost completely encircles the neck. This species is now almost as abundant in the English game preserves as the common one. Besides these two, there is the Bohemian Pheasant, of a silver-gray color throughout. These three species of Pheasant make up the immense flocks which stock the coverts on the large estates, and of which thousands are killed at the annual *battue*. We read accounts of the participation of royal personages and noblemen in pheasant shooting, and those who do not know, may think it very noble sport for these great people to be engaged in, while in reality they deserve no more credit than if they should go into a barn-yard and shoot at the chickens. Those who are to shoot are given favorable places, where they may sit if they please, while the game-keepers with dogs and much noise drive up the birds to be shot, and the slaughter goes on until the shooters—we can not regard them as sportsmen—are tired. Those who engage in such shooting, in which half-tame birds are knocked over, without a chance for their lives, apologize for its cruelty, by asserting that it is necessary for the good of the birds themselvcs. But for this, the natural increase would be so great that the birds would suffer by starvation, as the land would not naturally produce sufficient food for the immense numbers. Even now, large plantations of berry-bearing shrubs are made to support them. The Golden Pheasant of China is one of the most gorgeously-colored of birds, no description can give any idea of the richness of its plumage. It is said that the experiments made in the naturalization of this in England promise success.

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Chicken Cholera.—"J. R. S.," Buffalo, N. Y.," who makes a specialty of Plymouth Rock chickens and Bronze Turkeys, writes: "The cholera has been in the neighborhood for the last three or four months, and some six weeks ago I discovered it in my flock of Plymouth Rocks. On its very first showing, I made up a strong ooze or decoction of White Oak bark, by boiling about a peck of the inside bark, cut fine, in water enough to cover it; corn or meal was soaked in this liquid, and fed to the whole flock, both turkeys and chickens, and to both sick and well, twice a day for some four days. The sick recovered in about two days. No more were taken sick, and all are as well as ever. I did not wait for the disease to kill off any, but took it in it first stages.

Insect Work.—"D. L. P." sends from Little Rock, Ark., a piece of stem of a pear tree, which has a clear groove all the way around it, cut half way through the wood, as neatly as if it had been put in a lathe and turned. Mr. P. is desirous of knowing what does the work. It is done hy an insect called "The Girdler," of which we hope to give an engraving at another time.

Calendar for March, 1880.

1 Day of Month.	1 Day of Week.	*Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon.* Sun rises.	Sun sets.	Moon rises.	*N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois.* Sun rises.	Sun sets.	Moon rises.	*Washington, Maryland, Virginia, Kentucky, Missouri, and California.* Sun rises.	Sun sets.	Moon rises.
		H.M	H.M	H. M.	H.M	H.M	H. M.	H.M	H.M	H. M.
1	M	6 35	5 50	11 43	6 34	5 51	11 39	6 32	5 53	11 34
2	T	6 34	5 51	morn	6 32	5 52	morn	6 31	5 54	morn
3	W	6 32	5 52	0 55	6 31	5 53	0 55	6 29	5 55	0 44
4	T	6 30	5 53	2 1	6 28	5 55	1 55	6 28	5 56	1 49
5	F	6 29	5 55	2 57	6 28	5 56	2 52	6 26	5 57	2 46
6	S	6 27	5 56	3 44	6 26	5 57	3 39	6 25	5 58	3 34
7	S	6 25	5 57	4 22	6 25	5 58	4 19	6 21	5 59	4 14
8	M	6 24	5 58	4 53	6 23	5 59	4 51	6 22	6 0	4 49
9	T	6 22	5 59	5 22	6 21	6 0	5 20	6 20	6 1	5 19
10	W	6 20	6 1	sets	6 20	6 1	sets	6 19	6 2	sets
11	T	6 19	6 2	7 6	6 18	6 2	7 5	6 17	6 3	7 4
12	F	6 17	6 3	8 11	6 16	6 3	8 9	6 16	6 4	8 7
13	S	6 15	6 4	9 15	6 15	6 5	9 12	6 15	6 5	9 9
14	S	6 14	6 5	10 18	6 13	6 6	10 14	6 13	6 6	10 10
15	M	6 12	6 6	11 21	6 11	6 7	11 14	6 11	6 7	11 9
16	T	6 10	6 7	morn	6 10	6 8	morn	6 10	6 8	morn
17	W	6 8	6 9	0 17	6 8	6 9	0 11	6 8	6 9	0 5
18	T	6 7	6 10	1 9	6 6	6 10	1 3	6 6	6 10	0 58
19	F	6 5	6 11	1 56	6 5	6 11	1 50	6 5	6 11	1 45
20	S	6 3	6 12	2 37	5 3	6 12	2 32	6 3	6 12	2 27
21	S	6 1	6 13	3 12	6 1	6 13	3 7	6 2	6 13	3 3
22	M	6 0	6 14	3 42	6 0	6 14	3 39	6 0	6 14	3 36
23	T	5 58	6 15	4 10	5 58	6 15	4 8	5 59	6 15	3 59
24	W	5 56	6 17	4 36	5 57	6 16	4 35	5 57	6 16	4 34
25	T	5 54	6 18	5 1	5 55	6 17	5 2	5 55	6 17	5 2
26	F	5 53	6 19	rises	5 53	6 18	rises	5 54	6 18	rises
27	S	5 51	6 20	8 11	5 52	6 19	8 8	5 52	6 19	8 5
28	S	5 49	6 21	9 28	5 50	6 20	9 24	5 51	6 20	9 19
29	M	5 47	6 22	10 43	5 48	6 21	10 38	5 49	6 21	10 32
30	T	5 46	6 23	11 52	5 47	6 22	11 46	5 48	6 22	11 41
31	W	5 44	6 25	morn	5 45	6 24	morn	5 46	6 23	morn

PHASES OF THE MOON.

MOON.	BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	D. H. M.	H. M.	H. M.	H. M.	H. M.
3d Quart.	3 6 23 ev.	6 11 ev.	5 59 ev.	5 47 ev.	5 17 ev.
New M'n	10 8 3 ev.	7 51 ev.	7 39 ev.	7 27 ev.	6 57 ev.
1st Quart	18 7 52 ev.	7 40 ev.	7 28 ev.	7 16 ev.	6 46 ev.
Full M'n	26 8 39 mo.	8 27 mo.	8 15 mo	8 3 mo.	7 33 mo.

AMERICAN AGRICULTURIST.

NEW YORK, MARCH, 1880.

Hints for the Work of the Month.

[*The Hints and Suggestions in these columns are never copied from previous years, but are freshly prepared for every month, from the latest experience and observations, by practical men in each department.*]

Spring Work.—The spring of the Almanae now begins; but the spring-like weather during a large portion of this winter, has allowed the spring work of the Middle, Southern, and Western States, to be greatly forwarded. For the first time in many years, the writer has been plowiug through nearly the whole of January, and hundreds of other farmers have done the same. Fencing, ditching, clearing wood-land, and even sowing grass-seed, has been extensively done, as though spring had already come. Sometimes, "the most haste is the worst speed," and it remains to be seen, if, after all, the season's work will be benefited. It is a peculiar time, in which cautiou should be exercised, lest work done too soon, may need to be done over agaiu.

Spring Wheat.—Spasmodic efforts are made now and then, to grow spring wheat in localities where fall wheat only should be sown. Spring wheat requires a eool climate, and the hot and early summers of the Middle States, are not favorable to it. Nevertheless, many farmers have "tried once more," and have failed, as might have been expeeted, and as we have often given warning would be the result of attempts to grow this class of wheat too far South. Southern New York, New Jersey, and Pennsylvania, are out of the spring wheat latitude, and a line west from Central New York, will as nearly as possible separate the fall wheat and spring wheat distriets. Where spring wheat is sown, the seed should be in the ground as early as the soil can be fitted for it.

Oats follow spring wheat, being somewhat less hardy. It is thought by some, that oats will take no harm from careless seeding. But this is a mistake, for a good crop, deep covering in a well prepared soil is needed; shallow sown seed does uot tiller; while that sown deep will tiller about as much as wheat; with good covering, the seed may be sown much earlier, and will be safe against changes of the weather, while seed near or on the surfaee, will be destroyed either by frost, or by dry weather, ss soon as it sprouts.

Covering Seed.—Experience will satisfy any one, that drill-seeding is far better than broadcast sowing; there is a saving of seed, every good seed grows, and none is wasted, and the plants having a better root, are hardier and more vigorous. But a drill costs a large sum, is used but twiee a year, and for a short time, and for a single purpose only. An implement that will serve more than one purpose is economical. For instance the Acme Pulverizer, described on page 96, not only breaks up, mellows, and levels the ground, but it covers seed as well, and evenly, as a drill, leaving similar ridges and furrows. With such a maehine, all the work subsequent to the plowing, may be done, and well done; for, by a little ingenuity, a broadcast sower may be attached to it. Inventors will, no doubt, in time furnish us with a machine that will plow several furrows, mellow the ground, and sow and cover the seed, at one operation.

Fertilizers for Spring Crops.—Top-dressing fall-sown crops, should be done this month if at all. The returning warmth first affects the roots, and they start to grow before the leaves. The stimulant is thus needed for the roots, before the upper portion has appeared to grow. A dressing of 150 or 200 pounds per acre, of any good artificial fertilizer, ean be used with profit on any crop, if applied at the proper time, when the growth begins to start.

The present Necessity of American agriculture, is larger crops at the same cost, or a less proportionate cost, than our present small ones. This result can only be seeured by additional fertilizing. The present average of our crops is not more than one-fourth of that which the soil is capable of producing, and this extra three-fourths may be produced without any more labor by the use of fertilizers or additional manures; but fertilizers chiefly.

Artificial Fertilizers add to the soil certain elements in a condition in which they are immediately active, and forec a strong, vigorous, early growth, and so enable the plants to push out a large number of feeding roots, which find out, and appropriate the manure later, when it is in the best condition for plant food.

A Strong Plant Digests its Food better than a weak one, and its appetite, so to speak, is more vigorous, precisely as is that of a strong, healthy young animal. It is with the plant as with the animal; early feeding, and vigor of growth, bring early and vigorous maturity. The farmer should study to get early a strong and healthy growth.

There is no Fear of a Surplus.—The world's markets are at our feet. The fear that we may produce more than can be disposed of, is a bug-bear and a phantom. It has been conclusively shown, that at a certaiu price, we can control all the European markets, and that this price, while it pays us fairly, is too small for a profit to the European farmers, who have to pay large rents, heavy taxes, employ expensive labor, aud use costly fertilizers.

Think for a Moment!—There are seven millions of soldiers in Europe, who are non-producers, and expensive consumers; two or three milliou of army horses, all eating, and not working; emperors, kings, princes, and titled persons of all kinds, who are supported in the greatest luxury out of the public revenues; and "the farmer pays for all."

We Need not Fear to Compete with farmers so burdened; our prosperity consists in lessening the cost of our produec, and selling it to those nations, who thus hamper themselves with burdens too grievous to be borne; becoming in fact, the food producers for a large portion of the population of the world, nearly oue-half living without labor.

All that is Neccssary is to study and learn accurately the true principles of our profession as farmers, and put in practice the most effective work. How to do these, is what the *American Agriculturist* has taught, and is still teaching.

Fodder Crops.—It has been proved repeatedly; that one acre of good green fodder will feed two cows through the summer. Fodder crops must be put in early. A mixture of oats and peas is the best crop for early cutting, to come in after the first clover, which follows the rye. The two sown together, will yield, on one acre, about as much as if sown separately on two acres. This may be doubted,

but it is true. Tall growing leafy oats, and tall peas, yield the most fodder; the "Black-eye Marrowfat" pea, grown in Canada as a field crop, is the best for our use, the seed being free from weevil. For a second crop, the earliest small "Canada Gray" pea may be sown. The fodder is in the best condition for cutting, when the peas are in full blossom.

Southern Cow-Peas will produce good green fodder for late use, but cannot be sown until May, or after corn is planted. Those who wish to sow them, should look for seed, as it is not always to be had.

Seeds.—All the seeds that may be required, should be procured at once. There are some kinds of seed that are better to be changed occasionally, oats and potatoes are of this kind, and should be procured from a northern locality, where the oats are hardier, and the potatoes larger and more vigorous.

Clover and Grass Seed.—Clover may be sown this month. When the ground is lifted and cracked by a light frost, the seed may be sown with good effect. But the preferable method is, to sow so soon as the soil is dry enough, and then run over the ground with a light smoothing harrow, and spread 150 lbs. of fertilizer immediately. Orchard-Grass is a most valuable kind to sow with clover; it is early and late, and is unsurpassed for cutting for soiling, or for hay. Three bushels of seed per acre, is not too much, as close seeding is needed, to prevent the grass from forming large clumps or stools.

Grass Lands.—It is a mistake to suppose that our climate forbids the success of permanent grass for meadows and pastures. If the right kind of land is chosen, low, moist, and full of vegetable matter, and is kept well manured, and occasionally re-seeded, we can have permanent grass as well as other countries. But it is necessary to sow, and encourage a number of kinds of grass, those with creeping roots being preferable, if the quality is good. This subject is worthy of study and experiment.

Rolling.—The roller is both a good and a bad implement; good when rightly used, but very bad otherwise. One good use of it is, to run it over meadows early in the spring, to smooth the surface, press in stones and tufts, mole-runs, and other irregularities. Grain fields are also benefited by rolling, which crushes any lumps left after the winter, presses in roots that may have been thrown out, and covers grass seed. Light rollers are the best, if a heavy one is needed, it is always easy to load a light one, but one cannot make a heavy roller light.

Live Stock.—It is a critical time with young animals, and sometimes with old ones. Those that have been well kept, will continue to do well, but it is safest to give all young animals, especially calves, a dose or two of physic. The blood becomes affected by the dry feeding, and close herding of the winter, and some laxative is required. Otherwise the danger of febrile diseases, of which Black Quarter (anthrax or carbuncular erysipelas), is the most frequent, will be imminent. Two ounces of Epsom Salts, or half an ounce of Hyposulphite of Soda, given twice, may save a calf. A pint of Linseed Oil, given two or three times to a cow or a horse, will help the digestion, loosen the hide, and facilitate the change of coat, which is accompanied by irritation of the skin, and slight fever.

Vermin.—Make a clean sweep of lice, ticks, fleas, and other vermin, as soon as possible. Oil or grease is the best basis for an effective remedy, and Sulphur is perhaps the best thing to add to the oil. One part of Kerosene, added to four parts of Linseed Oil, makes an excellent application, that is not in any manner injurious to the skin. Ticks may be picked from sheep and lambs. They will come out on the fleece on a warm day, and the best instrument with which to kill them, is a pair of sharp pointed scissors. Kill at the same time every round, red egg that may be found.

Poultry.—"The early chick gets the early worm," and the sooner begins to feed itself. March pullets are those which fill the egg basket in the winter time. Therefore set all the broody hens for which eggs can be procured as soon as possible, and take great care of the chicks which come in this month. A warm run out of doors may be made under a hot-bed sash, arranged between two coops, and laid on boards set on their edges.

A Farm Hospital.—There will often be accidents and sick animals on a farm. The greatest care cannot always insure against accidents. A pen or close stall made in a warm shed or out building, will be found very useful for sick animals, whether a horse, cow, calf, or fowls. It will be useful for a calving cow, or to keep weaning calves in. It should be at least 12 feet square, so as to give sufficient room.

Work for Stormy Days.—Stormy days may be made available for putting all the machines in good order, cleaning and oiling them. This may be done profitably twice during the winter, for a machine depreciates more when idle, than when at work. This fact is well known among machinists, but overlooked by farmers, and their machinery is neglected.

Remember, Lime-Wash is a valuable purifier for spring use, anywhere; it cleanses and sweetens.

Notes on Orchard and Garden Work.

Our country is so large that it is not often that remarks about the weather can have a general interest. All along the Atlantic Coast, and extending for a varying breadth inland, is a district in which, up to the first of February, there was practically no winter. The large number of our readers within this district are much interested in the weather question, which also concerns others, especially fruit growers, outside of it. What is to be the result of this unusually warm weather which prevailed for weeks together? In many cases vegetation in fruit trees, shrubs, etc., has been too far excited to sustain a sudden change to real winter weather (and as we write such a change has come) without injury. To what extent next summer's fruit crops are affected by the weather cannot yet be told, and the anxiety of the fruit grower as to his prospects must continue until after blossoming time. There should be no delay in purchasing all needed implements, fertilizers, seeds, etc., and many who are just starting out in garden and orchard work, will ask: "Where shall I buy?" A word just here may save both the questioners, and the Editors of the *American Agriculturist* unnecessary trouble. It is to be remembered that all *suspicious* business houses, manufacturers, and dealers are excluded from our advertising columns; only those obtaining space of whom we would order goods ourselves if needed. By a careful consultation of these business notices the question "where to buy" may be answered at once. These advertisers are always glad to furnish information, by sending catalogues of their goods, and to reply by letter. In most cases it is better for those desiring to purchase, or to obtain information about implements and other articles, to write directly to the dealers rather than to us. In garden work there are two extremes to be avoided: being always behind the season, and always ahead of it. The soil should not be worked when it is so wet that it is sticky, and will afterwards dry into a hard mass—and on the other hand it should be worked so soon as it is dry enough. Let both the season and the crop go along together to obtain the best results.

Orchard and Nursery.

In planting an orchard, the ground should first be prepared by thorough plowing and manuring. This matter is often ignored, while the fact is that, except upon new land, unless the soil taken for the orchard is in at least as good condition as would be regarded proper for wheat, corn, or other farm crops, a paying orchard cannot be expected. It would have been better to have prepared the land last fall, but the failure to do so need not prevent one from planting; plant now, manure later. The trees should be ordered at once, as a brief delay, may find the best varieties—just the ones wanted—all exhausted. If the ground is not ready when the trees come, they should be heeled-in, that is, their roots covered with soil, that they may not dry out. In setting the trees, great care should be exercised; it does not pay to hurry through this kind of work. The tops should be cut back, so that the evaporating leaf-surface of the transplanted tree, may correspond pretty nearly with the reduced amount of absorbing root-surface.

Trimming before Planting.—This is a matter of much importance, the whole future of the tree depending upon its being properly done. No matter how carefully a tree may be taken up, some of its roots will be injured, and as ordinarily lifted, the trees that come from the nursery do not have half the roots that belong to them. One must exercise judgment in the matter, but it is safe to say, that one-third of the length of shoots should be cut away at any rate, and often more must be removed.

Laying Out.—The common method is the Square; but if the most is to be made of the ground, what is called the Quincunx, gives the most available space to the greatest number of trees. For this plan, with illustration for setting, see the *American Agriculturist*, September, 1879. A list of the best kinds of fruits for the orchard, is given in the Notes of the January number for the present year.

Injured Trees must be looked to; if broken down, they should be trimmed; girdled trees will need to be banked up with earth, or grafts joining the bark above and below the girdling, should be inserted.

Pruning can be continued until the sap starts, covering all large wounds with a grafting wax, made of three parts each of beeswax and rosin, and two parts of tallow, melted and thoroughly mixed. This is to be used in the melted state, applied with a brush. Some prefer to use paint instead.

Grafting.—Plum and cherry trees must be grafted earlier than the pear or apple. For directions with illustrations of grafting, see the last month's Notes.

Cions.—A good supply of cions should be secured early; they must not be cut after the sap begins to flow, unless to be inserted immediately.

Budding Stock.—The twigs and branches above the buds, that "took" last summer, are to be removed, leaving only a half-inch or so above the bud.

The Fruit Garden.

In selecting a spot for a fruit garden, choose a warm place, and as near the house as possible, that it may be both convenient for gathering, and more secure from trespassers. The soil should be well drained, deep, mellow, and enriched with well rotted manure. The importance of a good selection of varieties cannot be too strongly insisted upon. For a list of the leading kinds of the various fruits see the January number Notes; for others see the Catalogues of dealers. The selecting of new sorts for the main reliance, is not recommended. Let the bulk of the planting be of old, and thoroughly tested varieties, rather than of new and untried kinds.

Planting.—So soon as the ground is settled, plant the trees, shrubs, etc., that they may get an early start, and be well established by the time drouths come. Like animals, much depends on early growth.

Blackberries and Raspberries start very early, and it is best to set them in the fall; but very early in the spring will answer. The canes produced this year, will bear the fruit the following season.

Strawberries.—Old beds are to be uncovered. The method of cultivating the vines in rows three feet apart, is now generally considered the most satisfactory. See article and engraving of the "Sharpless" Strawberry, on page 103 of this number.

Grapes.—Every farmer's family should have all the grapes they can eat, from September to January. It is not necessary to have a large vineyard for this; a few vines, each of the best sorts, and properly treated, will give a great amount of fruit. There are hundreds of out-of-the-way places where a vine may be set, such as along a fence, or it may be by the side of a shed or barn; with good soil, and care in pruning, satisfactory returns may be expected.

Kitchen and Market Garden.

The Notes for this department last month, were unusually long, and much then given is timely now. A careful review of the subject of Hot-Beds will help those who inquire about raising early plants.

Cold Frame Plants.—Cabbages, Lettuce, and Cauliflowers, should be set out as soon as the ground can be worked. In market gardens, Lettuce is set between the rows of Cabbage and Cauliflower.

Hardy Vegetables are those that may be planted,

or the seed sown, "as early as the ground can be worked." Of such are; Beets, Cabbages, Carrots, Cress, Cauliflower, Celery, Lettuce, Parsley, Parsnip, Onion, Pea, Radish, Turnip, and Spinach. The

Tender Vegetables; Beans, Cucumber, Okra, Pumpkin, Squash, Tomato, and Watermelon, should not be sown until the ground is well warmed, or according to the old rule, "about corn planting time,"—a very safe guide in most localities.

Novelties.—New varieties are offered every year, and their claims to public favor are presented. It would be a mistake to rely upon novelties for the main crop, which should always be of well established varieties; but we advise those who can do so, to experiment to some extent with novelties as a source of pleasure, and sometimes profit.

Asparagus.—The coarser parts of the manure with which the bed was covered last fall, are to be raked off the bed and the fine portions forked in.

Greens.—See article on page 104. The remarks on Spinach there given are of special importance.

What Vegetables Shall we Raise?—For a number of years we have given a list of the standard varieties of vegetables as a guide to the inexperienced. This year Mr. Henderson gives a list of the old and reliable kinds, together with the results as obtained in his trial grounds, with the recent novelties.

Flower Garden and Lawn.

For keeping up the freshness and vigor of the lawn, a spring dressing should be given, either of ashes, guano, fine bone, Nitrate of Soda, or a rich and thoroughly fine compost. Sow grass seed on any bare spots. In planting ornamental trees, grouping, rather than formal planting or setting in rows, is to be encouraged, so far as the nature and size of the grounds will permit it to be done.

New Lawns.—Let the soil be in a fine state of tillage by thorough working and manuring, after which, for heavy clay soils, Kentucky Blue-Grass is to be sown. Red Top is best for light and sandy soils, with a little mixture of White Clover in both cases. The seed should be applied liberally, as a fine turf can only be had when the plants are crowded. All the way from two to six bushels to the acre are advised. If what we buy were all *seed*, no doubt the smaller quantity would be enough, but in the uncertain relations between chaff and seed, one can not be sure of properly thick-seeding with less than four bushels. Sow half the seed in one direction, and cross-sow with the other half. The seeding should be done as soon as the land can be put in proper condition.

Walks and Drives.—A solid foundation is the only surety for a good walk or drive; and to secure this, use large stones for the bottom, begin below the reach of frost, and smaller ones nearer the surface. A walk or drive that is cheap in the beginning will always be unsatisfactory and dear in the end.

Annuals.—Sow these in hot-beds about six weeks before the outside beds are to be ready for them.

Bulbs in beds may be uncovered so soon as warm weather sets in, covering again on very cold nights.

Turfing.—In selecting turf for use around beds and along walks, etc., see that no unwelcome weeds are thereby introduced. The foundation for the turf should be as carefully prepared, as for seed.

Greenhouse and Window Plants.

As the days get longer and warmer, the attacks of the insect pest will be more vigorous. It may be necessary to fumigate as often as twice a week, using tobacco stems freely for this purpose. For the Red Spider, thorough washings and use of the syringe are the most effectual remedy.... An abundance of water and air will be required; the sashes and windows may be left open much of the daytime.

Bulbs brought into heat will soon start and produce flowers. Those that have bloomed should be allowed to complete the growth of their leaves.

Propagation of stock of bedding plants for sale or home use should now be going on.

Seeds for plants to go into the open ground are to be sown in boxes and given a plenty of heat.

Trials of Vegetables in 1879.

BY PETER HENDERSON.

Very few new varieties of vegetables that have come under our notice have shown any special merit during the past year, though the varieties tested in our trial grounds were more numerous than ever before, numbering over 800 different sorts, and embracing nearly every class of vegetables in cultivation, all of each class being grown in the same soil and under the same conditions. The great use of this comparative test of so many different kinds is not so much to know what kinds to grow as to know what not to grow. In vegetables, as in fruits and flowers, we all offer far too many varieties; the public would be far better served if nurserymen, seedsmen, and florists would have the courage to cut out three-fourths of the varieties of fruits, vegetables, and flowers from their lists, describing only a few of the best of each class, and also naming such as proved to be specially unworthy of culture. I give the following brief notes on vegetables as they appeared in our grounds at Jersey City Heights, N. J., during the summer and fall of 1879:

Asparagus.—In October, 1878, we planted 12 roots each of Colossal, Giant, and Mr. Smalley's Defiance, but the number was too few to give any certain results. In the fall of 1879 we planted 200 plants of each kind in carefully prepared ground, and will be better able to judge this season which is best for general cultivation. I am inclined to think favorably of the Defiance, but will not hazard an endorsement until our trial is more complete.

Beans, Bush.—Flat-podded China proved earliest, Mohawk next; for general crop, Valentine's. The "Golden Wax" is a new and distinct variety that proved on a second year's trial excellent, being early, stringless, and of very fine flavor; it is one of the best shell beans. For *Pole Beans*, nothing is better than Large Lima. Giant Wax is a stringless pole snap bean, but has no special merit.

Beets.—The old Bassano is earliest, but on account of its light color, is now superseded by the Egyptian, which is by far the best of the dark colored, round varieties. Bastian's Blood Turnip, a newer kind, is second in earliness to Egyptian. The best long variety was Long Smooth Red.—*Mangels.* Norbitou Giant proved the best red, and Kinver Globe the best of the yellows.

Cabbages show no change in the past three years. For earliest, the Wakefield still leads, then comes Early Summer, only about 8 days later, but of nearly double the weight. This sort, we find, is more valued generally than any other early cabbage, as it seems to adapt itself better to all sections of the country. The Wakefield has never been a favorite in the Southern States, though almost exclusively grown by market gardeners at the North, but the Early Summer is an equal favorite, south and north, and is now perhaps most generally cultivated.

Savoy Cabbages we find are, as they deserve to be, yearly becoming more extensively cultivated. An improved variety, called Netted Savoy, introduced last season, we find to be one of the best.

Cauliflower.—Our reports from the new variety named Early Snowball, fully confirm our own tests. This was first sent out in 1877, and was illustrated in the *American Agriculturist* of Feb., 1878. It undoubtedly is the earliest, largest, and most certain to head of any variety we know. It is this season classed by some seedsmen as synonymous with the Erfurt; this is an error, as it is entirely distinct from and superior to the best strains of Erfurt. All our New Jersey market gardeners now grow it exclusively for early crop. For late crops, which are mainly grown by the Long Island gardeners, the Half Early Paris and Algiers are the best.

Celery.—The four best sorts for this section are Golden Dwarf, Half Dwarf, Dwarf Sandringham, and London Red. For market, I should advise the relative proportions of four of Golden Dwarf, three of Half Dwarf, two of Dwarf Sandringham, and one, or one-fourth as much as of the first, of London Red. In my opinion, it is always best to grow several kinds of celery; so much depends on location and season, that it is not safe to risk a crop of all one kind, as we find that varieties that will "burn" or "scald" in one place, are entirely exempt from it in another. Where the Dwarf Sandringham does well, nothing is so good, as it is always entirely solid.

Carrot.—The Danvers was tried more fully the past season, but whether our soil is not adapted to it, or from other causes, our success has not been that claimed for it as giving the heaviest crop of any variety; the Improved Long Orange for general crop proved better. For forcing under glass, nothing surpasses the Scarlet Horn, while for early crop to be bunched and sold while young, Half Long Red or Stump-Rooted is the best.

Sweet Corn.—No change from the reports of last year. Crosby's Early stands first as both earliest and sweetest. Narragansett and Minnesota are a little earlier, but not so good. The very general and large demand for the Egyptian, sent out in 1877, tells of the value attached to it; almost all agree that it is the best flavored of all the Sweet Corns; being of very large size, it is one of the latest, but is none the less valuable on that account, as it gives us a supply after the general crop is done with.

Cucumber.—The best long, forcing English kinds are Sion House and Telegraph; these fancy sorts are now getting to be much sought after by our first-class hotels and restaurants. Improved White Spine is yet mostly grown both for a main crop under glass and in the open ground. Green Prolific for pickling. The Burr or West India Gherkin is used to some extent as a fancy pickle.

Egg Plants show nothing new. New York Improved for general crop, and Long White and Black Pekin for variety.

Endive.—Moss Curled is the best for garnishing, and is equally edible with Green Curled and Batavian, the most used market kinds.

Leeks.—Carenton, very large and mild flavored, is perhaps best, though the American Flag is yet most used for general crop.

Lettuce.—As usual, our trials of this popular vegetable were on a large scale, over 50 kinds being experimented with. A number of "new names" proved to be old and well known sorts, and none among the large number proved to be new, or if any were new they had no merit to entitle them to be retained, so we again name as the best standard sorts: All the Year Round as the best *plain leaved*, Black-Seeded Simpson (new, 1878) as the best curled, and Silesia or White-Seeded Simpson as best curled for general crop. For forcing in frames Boston Market is now almost exclusively used.

Melons.—The standard market variety is the Hackensack, so-called from being extensively grown by the market gardeners near the town of that name in N. J., who, by careful selection, have brought this variety of Nutmeg Melon to a high degree of perfection. It is of large size, finely netted, green fleshed, and of excellent flavor. Surprise, a comparatively new sort, with whitish thin rind and salmon-colored flesh, is very rich in flavor, exceedingly productive, and of good size. Cassaba, a long, large kind, with yellow flesh, is also excellent either for market or private use..... *Water Melons.*—Mountain Sweet and Gipsy are the best market sorts. Phinney's Early is perhaps the earliest. The true White-Seeded Ice Cream is also one of the best.

Okra.—Improved Dwarf Green.

Onions.—Nothing different in Onions to report. Red Globe and Red Wethersfield in reds, White Globe and White Portugal in whites, and of yellows the Yellow Danvers. The varieties best fitted for the South are Queen, Giant Rocca, and Red and White Italian Tripoli, some of which grow very large, and are of mild flavor.

Parsley.—Fern-Leaved and Moss Curled.

Parsnips.—For general crop, Long Smooth, and for early, Short Round.

Peas.—American Wonder proved early and exceedingly prolific, and is without doubt the best of all the dwarf wrinkled peas; quality first-rate. We tested upwards of 20 "new" kinds, all claiming

superior earliness and productiveness; but nothing surpassed the Improved Dan'l O'Rourke for *first* early, and we therefore still recommend it as the best for general early crop. For *second* early we name first Alpha, then Fill Basket, Premium Gem, and William I. For late, Champion of England and Omega. Some of the Long Island farmers practice sowing the early varieties as a second crop in August, to be sold in October. For this purpose, Improved Dan'l O'Rourke is perhaps the best. When a good crop is thus raised, it is very profitable; but so much depends on the season that that is not always certain to be obtained.

Potatoes.—The St. Patrick has had a general and thorough trial, and not only from our own grounds, but from all sections of the country the reports are almost, without exception, so favorable that there is but little doubt of it becoming a leading sort. R. O. Bunnell, Dunmore, Pa., testifies that from 1 lb. cut into eyes (not from cuttings), and planted May 10th, he dug on Sept. 15th 226 lbs. All testimony goes to prove its wonderful productiveness. It is white, very oblong, and handsome; quality full average.....Beauty of Hebron.—A new early sort, very productive, and of good quality—a variety grown extensively in Northern New York. Genesee County King is late, but of average quality. Early Ohio is also fine and early, and will, we think, become one of our standard sorts. The earliest of all our potatoes was the Alpha, but the yield was poor.

Peppers or Capsicum.—Large Bell or Bull Nose, and Sweet Spanish, for general use. Long Cayenne and Cranberry for pickling.

Radish.—The best early kinds are Long Scarlet, French Breakfast, and Scarlet Turnip, which are nearly alike in the open ground, but for forcing the new Dark-Red Round and White-Tipped Scarlet are the best, as the tops are small and the root developes rapidly. In summer Radishes the new Olive Shaped Golden Yellow sent out the previous year proved very satisfactory. For winter, the Black and Grey Spanish and Rose China are the best.

Spinach.—We have tried over 20 samples of Spinach the past season, and find the Savoy-Leaved the best, especially for market. Our trials also developed the fact that a great deal sold for Savoy-Leaved is only the ordinary Round-Leaved Spinach. The new Thick-Leaved we find to be a very good sort, tender, and of fine quality. Large-Leaved Viroflay is a sort with large foliage; very good. We find great difference in the various stocks of Round-Leaved Spinach, some being quite inferior to others in quality and weight of crop.

Squash.—For summer varieties, Summer Crook Neck, and White and Yellow Bush. For winter, Hubbard and Yokohama.

Turnips.—For early, White and Red-top Strap-leaf; White Egg is yet rather new, but is fast gaining favor, as it is equally early as the Strap-leaf, it attains a greater size, and is remarkably handsome; it is also an excellent keeper, and can therefore be grown in fall for winter use. For second early, or winter for general crop, Yellow Globe and Golden Ball. French White is the best flavored of the Ruta-bagas; the American Improved Ruta-baga is more used, and really one of the best.

Tomatoes.—I have repeatedly given my opinion in the columns of the *American Agriculturist*, that we had reached that point in earliness with the Tomato where further progress had stopped. This was very forcibly confirmed last season. There was a great excitement among the market gardeners in the vicinity of Newark, N. J., one of them having about an acre of a "new" Tomato that was ripe 10 days before any other. The owner came to us and offered to dispose of the stock of seed. I took him through our collection, and showed him a variety that had some ripe fruit, and entirely distinct in foliage from any other. He admitted that it was very like his. A visit to his field, and comparison, showed it to be identical; and both were the old Keyes' Prolific, introduced a dozen years ago, and which is, without question, to-day the earliest of any smooth Tomato, but too small and inferior in quality for a general crop. I was never more impressed with the value of our trial ground, for had we not had this lot of Keyes' Prolific for comparison, the chances were 20 to 1 that this old variety would have again been sent out as a new sort with a new name; the man into whose possession it had come had never heard of Keyes' Prolific, and honestly thought he had a new sort.—We find that the favorite Tomato for general use is Acme, early, smooth, prolific, and solid. The color is of a purplish shade, and for some time this was an objection to its sale in the markets, but its other excellent qualities have offset this, and now it sells equal to anything offered.—Golden Trophy is a very pretty fancy variety, of a rich shade of yellow, is equal in all respects to the original, red Trophy, which is yet a standard sort, though not often seen so smooth as at first. The kinds which appeared to be best for general market purposes with us the past season were as the year before, viz.: Conqueror and Canada Victor, while for canning, Paragon and Hathaway's Excelsior are equally desirable.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our record kept daily during the year, show at a glance the transactions *for the month ending Feb. 10th*, 1880, and for the corresponding period last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats*
24 d's *this* m'th	453,000	1,715,000	1,904,000	34,000	289,000	1,054,000
25 d's *last* m'th	411,000	3,105,000	3,467,000	183,000	312,000	1,128,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
24 d's *this* m'h	321,000	23,226,000*	3,807,000*	118,000	237,000	1,019,000
25 d's *last* m'h	316,000	18,579,000*	4,091,000*	159,000	408,000	1,234,000

* Including sales for forward delivery.

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
24 days 1880..	453,000	1,715,000	1,904,000	34,000	28,900	1,054,000
28 days 1879..	337,000	2,131,000	1,314,000	58,500	429,000	431,000
SALES.	*Flour.*	*Wheat.*	*Corn*	*Rye.*	*Barley.*	*Oats.*
24 days 1880..	321,000	23,226,000	3,807,000	118,000	237,000	1,019,000
28 days 1879	.345,000	7,316,000	4,104,000	383,000	290,000	1,107,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush
Feb. 5, 1380..	1,822,400	736,350	257,400	904,300	1,568,450	323,000
Feb. 10, 1879..	2,918,206	1,501,708	513,557	859,804	734,745	85,154
Feb. 11, 1878..	1,674,035	774,470	208,846	831,673	1,415,633	318,079
Feb. 7, 1877..	3,083,819	2,302,261	374,142	671,114	956,114	388,605

4. *Exports from New York, Jan. 1 to Feb. 8.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
1880..	382,650	2,351,000	2,048,500	262,450	58,300	13,100	6,100
1879..	311,000	4,417,000	2,821,000	412,000	1,217	19,100	32,000
1878..	279,799	4,605,476	1,756,258	184,461	305,382	19,878	28,584
1877..	153,588	1,276,859	1,793,888	53,533	71,283	15,309	66,191
1876..	241,698	1,843,457	1,731,215	15,387	——	35,537	168,137

Of the notable features of general business, since our last Review, have been the growing ease in Money, which contributed to stimulate operations; very extensive dealings in the Public Funds, as also in miscellaneous Bonds, Mortgages, and Stocks at advancing prices; increasing activity and buoyancy in Real Estate, Dry Goods, Hardware, Metals, Drugs, Dyes, Chemicals, and toward the close in Groceries, with an improved demand also for Boots and Shoes, Fish, Petroleum, Naval Stores, Paints, Tobacco, Rice, Hemp, Oils, and most kinds of building materials....Hides and Leather weakened perceptibly in price, on a tamer movement....Hay and Straw met with a fair inquiry and generally strong quotations.....Seeds attracted more attention, and closed more firmly....Cotton has been freely dealt in, chiefly in the option line, but at variable rates, opening buoyantly but closing in favor of buyers .. A better demand has been reported for Wool, which has been quoted somewhat firmer, leaving off with an upward tendency, in view of comparatively meagre supplies of domestic product available... Provisions have been quite active, but, in the instance of hog products, fluctuating frequently in value, closing generally lower. Butter also yielded slightly, and Beef declined a trifle. Cheese and Eggs advanced rather sharply... Breadstuffs have been unusually variable, on freer movements in Wheat, chiefly in the speculative interest, though other articles, in this line, exhibited only a moderate degree of activity. Export purchases of Wheat and Flour continued on a restricted scale, the relatively high prices current here impeding operations. Corn met with a readier market for shipment, and, early in the month, at hardening prices. A good demand was noted for Oats, and a fair inquiry for Rye and Barley; Oats at stronger rates; Rye at irregular figures; while Barley receded, under more liberal and urgent offerings, with a moderate call for export account, mainly for feeding or low grade stock. The visible supplies of Wheat,—embracing the hoards at lake ports, in transit, and on the seaboard—at latest dates, embraced about 30,100,000 bushels;—of Corn, 13,100,000 bushels; of Rye, 979,000 bushels; of Barley, 4,155,000 bushels; and of Oats, 3,080,000 bushels, against, on Jan. 17, an aggregate of 31,024,000 bushels Wheat, 11,927,100 bushels Corn, 1,068,100 bushels Rye, 4,403,100 bushels Barley, and 3,318,000 bushels Oats. Receipts at this port have fallen off considerably, due, in good part, to interruptions in the forwarding movement, resulting from speculative manipulation of the markets of the interior, as well as the seaboard. Ocean grain freights further declined to the lowest quotations made here, on actual business contracts, in many years, having been down, by steam to Liverpool, to 2½d. per bushel; to Bristol, by steam, to 3@3½d. per bushel; to Antwerp, by steam, to 4d. per bushel; and by sail to Cork, for orders, 3s. 9d.@4s. per quarter of 480 lbs. Toward the extreme close, a livelier inquiry was developed for Flour and Wheat, especially for shipment, favored by the latest market advices by cable, which were of an encouraging tenor, leading to a rally in prices of Flour, of 10@20c. per bbl., and of Wheat, of 2@3c. per bushel, winding up firmly. Important shipments of Wheat, on through freight account, were reported recently, and represented as, in good part, consignments, receivers and holders availing themselves of the current extremely low rates on ocean freight, in which, however, a slight rise occurred in the final negotiations. Corn fell severely, particularly new crop, under a pressure to realize. Oats also weakened again, and Barley closed barely steady. Rye was advanced sharply, in view of the light offerings, with prime Western and State, boat loads, quoted up to 95c. bid, and as high as $1 asked, per bushel. Hops left off very tamely, owing, partly, to the very confident views of sellers of the better qualities; very choice to fancy lots of State having been held as high as 38@40c. per lb.

CURRENT WHOLESALE PRICES.

	Jan. 13.	Feb. 10.
FLOUR—Super to Extra State	$5 00 @ 6 00	$4 60 @ 5 75
" Super to Extra South'n.	5 00 @ 8 50	4 60 @ 8 25
" Extra Genesee..........	5 85 @ 7 25	5 75 @ 7 00
" Superfine Western	5 00 @ 5 60	4 60 @ 5 25
" Extra Western	5 50 @ 9 00	5 25 @ 9 00
" " Minnesota.......	5 75 @ 9 00	5 50 @ 8 75
BUCKWHEAT FLOUR. ℔ 100 lbs	2 10 @ 2 35	1 60 @ 1 90
BUCKWHEAT, per bush	— @ 62	60 @ 62
RYE FLOUR, Superfine.......	5 00 @ 5 40	4 60 @ 5 00
CORN-MEAL..................	2 60 @ 3 30	2 60 @ 3 35
CORN-FLOUR, per bbl........	4 00 @ 4 50	4 00 @ 4 50
OAT MEAL, ℔ bbl............	5 00 @ 7 00	4 75 @ 5 25
WHEAT—All kinds of White.	1 35 @ 1 50	1 35 @ 1 46
" Red and Amber.....	1 15 @ 1 55	1 20 @ 1 47½
" Spring..............	— @ —	1 20 @ 1 40
CORN—Yellow	53 @ 70	58 @ 67
" White...................	58 @ 70	58 @ 67
" Mixed	56 @ 60	56 @ 61½
OATS.......................	46 @ 51½	46½@ 53
RYE........................	92 @ 95	93 @ 95
BARLEY	70 @ 1 08	55 @ 1 05
HAY—Bale, ℔ 100 lbs........	60 @ 95	65 @ 90
STRAW, ℔ 100 lbs...........	50 @ 95	45 @ 1 05
COTTON—Middlings, ℔ lb....	12⅝@ 12⅞	13 @ 13⅛
HOPS—Crop of 1879, ℔ lb......	30 @ 40	27 @ 38
" " 1878, ℔ lb	7 @ 18	7 @ 20
" olds, ℔ lb...........	7 @ 12	4 @ 12
FEATHERS—Live Geese, ℔ lb	40 @ 55	40 @ 55
SEED—Clover, West. & St. ℔ lb	8¼@ 10¾	7½@ 10¾
" Timothy, ℔ bushel......	2 40 @ 2 75	2 75 @ 3 00
" Flax, ℔ bushel..........	1 65 @ 2 00	1 65 @ 1 90
TOBACCO, Kentucky, &c., ℔ lb.	3½@ 14	3½@ 14½
" Seed Leaf, ℔ lb.........	6 @ 40	6½@ 40
WOOL—Domestic Fleece, ℔ lb	30 @ 56	30 @ 56
" Domestic, pulled, ℔ lb..	15 @ 55	17½@ 55
" California	18 @ 42	15 @ 42
TALLOW, ℔ lb	6⅝@ 6¾	6½@ 6⅝
OIL-CAKE—℔ ton	35 00 @ —	32 50 @33 50
PORK—Mess, ℔ barrel	12 75 @13 00	12 00 @12 35
" Extra Prime, ℔ barrel..	10 50 @ —	10 25 @10 50
BEEF—Extra mess............	11 00 @11 50	10 75 @11 25
LARD, in trcs. & bbls, ℔ 100 lb	7 90 @ 8 40	7 50 @ 8 00
BUTTER—State, ℔ lb..........	18 @ 37	17 @ 36
" Western, poor to f'cy, lb.	14 @ 37	12½@ 36
CHEESE.....................	9 @ 14	11 @ 15
EGGS—Fresh, ℔ dozen	12 @ 18	13 @ 20
POULTRY—Fowls, ℔ lb........	6 @ 13	7 @ 11
" Chickens, ℔ lb...........	5 @ 16	10 @ 13
" Roosters, ℔ lb...........	4 @ 5	5 @ 6
Capons, ℔ lb.................	— @ —	16 @ 20
Turkeys—℔ lb.................	8 @ 13	7 @ 14
Geese, ℔ pair................	80 @ 1 25	1 00 @ 1 75
Geese, ℔ lb..................	5 @ 10	8 @ 12
Ducks, ℔ pair................	45 @ 80	50 @ 65
" ℔ lb..................	8 @ 13	10 @ 14
DUCKS, Wild, ℔ pair.........	25 @ 3 25	30 @ 3 00
APPLES, ℔ barrel.............	1 75 @ 4 00	1 75 @ 3 00
POTATOES, new Bermuda, bbl	— @ —	6 00 @ 7 00
" ℔ bbl................	1 25 @ 2 00	75 @ 2 00
TOMATOES, new, W. I., pr bx	— @ —	1 00 @ 1 25
TURNIPS ℔ bbl	75 @ 87½	50 @ 75
BEANS—℔ bushel...............	1 45 @ 1 95	1 35 @ 1 80
PEAS—Canada, in bond, ℔ bu	— @ 86½	Nominal.
" new, green, ℔ bag..	1 80 @ 1 85	1 75 @ 1 80
" new, Florida, per crate	— @ —	1 50 @ 2 50
STRING BEANS, nw, Flor., p.c	— @ —	3 00 @ 4 00
CARROTS, ℔ bbl..............	75 @ 1 00	62½@ 87½
BEETS, ℔ 100 bunches.........	87½@ 1 25	1 00 @ 1 25
" new Bermuda, per crate	— @ —	2 00 @ 2 25
CABBAGES—℔ 100	4 00 @ 7 00	4 00 @ 7 00
ONIONS—℔ bbl................	2 25 @ 4 50	2 25 @ 4 75
CRANBERRIES, per bbl	6 00 @ 9 00	6 50 @ 8 75
SQUASH, ℔ bbl................	1 12½@ 1 50	1 00 @ 2 50
CELERY, per dozen bunches.	75 @ 1 00	1 25 @ 2 25

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Jan. 12...............	9,059	204	1,031	27,079	38,286
Jan. 19	14,183	246	988	38,421	33,982
Jan. 26...............	12,786	197	915	25,008	32,451
Feb. 3...............	12,648	172	1,159	36,655	32,718
Feb. 10...............	10,890	167	1,202	34,339	33,672
Total for 5 *Weeks*..	59,566	986	5,295	161,502	171,109
do. *for prev.* 4 *Weeks*	43,503	1,051	5,130	100,719	118,278

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week.......	11,913	197	1,059	32,300	34,222
do. do. *last Month* ..	10,877	263	1,282	25,180	29,569
do. do. *prev's Month*..	10,266	314	1,613	30,906	45,590

Prices for beeves the past five weeks were as follows:

WEEK ENDING	*Range.*	*Larger Sales.*	*Aver.*
Jan. 12..........	6½@11 c.	8¾@10 c.	9½c.
Jan. 19..........	7 @11 c.	8¾@10 c.	9½c.
Jan. 26	7 @11½c.	9 @10 c.	9½c.
Feb. 3..........	7 @11½c.	8¾@ 9¾c.	9¼c.
Feb. 10..........	7½@11 c.	8¾@ 9¾c.	9¼c.

Beeves.—The market opened weak in spite of light receipts, hut withont any decline in prices; an export of 2000 head the first week helping it greatly. In fact, this trade is all that sustains the valnes of live stock in the United States, for a shipment of 5,770 head in one week—a quantity unprecedented, and showing to what enormous proportions the business has grown—is clearly the mainstay of the trade. This outlet, like a pendulum of a clock, checks irregular movements, and the past month has kept a very steady market. Towards the close, prices gave way a little and sales were free at a small decline. Dressed beef was offered in plenty at 7½c. per lb.; the range for poor stock 55 to 56 lbs. per 100, was 7½ @ 8½c. per lh. for fair to prime, 8½c. @ 10c. for 56 lbs. per 100, and extra to dress, 57 lhs. per 100 weight, 11½c. per lh. ....**Cows.**—There has heen a quiet sort of demand for good milkers, having been taken at prices somewhat lower for everthing hut choice family cows. The market closed steady at $30 to $50 for fair to good, and $60 to $65 for choice....**Calves.**—Business in veal has been brisk, except for grassers, which have heen neglected under a good supply of veals, and brought 2¾ to 3½ cents per lb. alive. Veals have sold for 6c. to 8½c. per lh. dressed weight....**Sheep and Lambs.**—Prices have been well snstained and an active demand has existed during the past five weeks. Lambs ranged from 6½c. @ 7½c. per lb. live weight, and sheep from 5c. to 6½c. per lb.; some choice wethers have sold at $6.60 per 100 lbs. The closing prices were without change on a firm market.... **Swine.**—A quiet market and steady prices have marked the past five weeks. The business has been done mainly at 5c. @ 5½c. per lb., and at the close, prices were slightly lower, the bulk of the sales heing at 5c., and a few at 5½c. per lb.

The Horse Market.—Stock has heen accumulating for months past with nothing to move it but inquiry. A few good driving animals have changed hands, but for work and eommon horses trade has been entirely nominal. The outlook seems to foreshadow a late and slow trade for spring with unsatisfactory prices for dealers.

Prices of Feed.

Cotton-seed meal,	per ton.	$30.00
Linseed-eake meal	"	37.50
Middlings	"	24.00
Bran	"	23.00
Corn-meal	"	23.00

Priees of Fertilizers.

Nitrate of Potash (95 per eent.), per lb.	9 @9½c.
Sulphate of Potash (potash 44 per eent) per lb....	3½@4 c.
do. do. (potash 27½ per eent) per lb..	1½@1¾e.
German Potash Salts (potash 12 to 15 p.e.) p. ton.	$15.00@18.00
Muriate of Potash (potash 50 per eent), per lb....	2 @2¼e.
Nitrate of Soda, per lb.	4¾@5 e.
Sulphate of Ammonia (25 per eent.), per lb.....	4e.@4¼e.
Dried Blood (ammonia 13 per eent) per ton......	$40.00@45.00
No. 1. Peruv. Guano 10 p. et. ammonia, standard, ₩ ton..	$56.50
do. do. Lobos, do. do. do.....	47.50
do. do. guaranteed, ₩ ton, eargo K	56.00
do. do. reetified, per ton, 9.00 p. e..	65.00
do. do. do. do. 3.40 p. e.	51.00
Soluble Pacifie Guano, ₩ ton	45.00
Exeelsior Fertilizer Works, Fine Ground Raw Bone,...	55.00
Mapes' Complete Manure (clay soils) per 1,000 lbs.......	25.00
do. do. do. (light soils) per 1,000 lbs.... ..	25.00
do. do. do. "A" Brand, (wheat) ₩ 1,000 lbs.	20.00
do. Bone, strictly pure, meal ....per ton.......	42.00
do. do. do. medium...... do.	36.00
do. do. do. dissolved..... do.	42.00
do. Fruit and Vine Manure........... do.	35.00
Stoekbridge Rye Manure, per ton	45.00
" Wheat do do	45.00
" Seeding Down Manure, per ton......	40.00
Bowker's Wheat Phosphate, per ton.	40.00
Baugh's Raw Bone Phosphate, per ton	33.00
Baugh's Manure for Tobaceo and Grain, per ton..	45.00
Walton, Whann & Co.'s Raw Bone Phosphate....	40.00
Gypsum, Nova Seotia, ground, per ton..........	7.50

Pages Worth Studying.—As always, upon the approaeh of spring work, there is an increased number of announeements from dealers in Seeds, Plants, Implements, Fertilizers, etc., and in this year of renewed aetivity in all departments, the crowd is greater than ever. To avoid the least trenching upon our reading eolumns, four extra pages have been added to aeeommodate our friends, and still a large number of late comers are necessarily left out. These advertising pages are of great value to our readers as a souree of information, and worth stndying carefully to learn what is offered, old and new, and by whom. It is equivalent to going to a great Fair, where a multitnde of reliable men exhibit what they have to supply. Reading what others say in a business way, and *how* they say it, will usually give one new thoughts and suggestions useful in his own ealling. We have exeluded many advertisements because not approved, or hecause from men not known to be, or not believed to be, every way trustworthy....☞When corresponding with any of our advertisers, or sending for catalogues, ete., it is well to state that you are a reader of *this* Journal. They will know what *we* expect, and what *you* expect of them as to prompt and fair treatment.

Toads are the friends of gardeners, destroying the injnrious inscets in large nnmhers. In the extensive vegetahle gardens around London and Paris, the toads are looked after with great care, and are even a part of the stock invested in the business. Many of the toads in and around London are hrought from France, where they pay as high as six shillings a dozen for them.

MARCH ON.

"Forward!...MARCH!" is the general order for THIS month. Not only is it implied in the name of the month itself, but in the Season also. The hibernation, the resting of the winter, is coming to an end. Work in the Fields and in the Gardens will soon begin, where it is not already under way. Much of the success depends upon *planning well.*

Is there a man who cultivates a farm, an orchard, a vegetable or fruit garden, or a flower plot, or who raises animals, that can not find *useful* hints and suggestions in the pages of this Journal? If there is, it is *not* the paper we *intend* it to bc.

But we believe it will surely pay *every one* to study these pages.

Hundreds of thousands are already doing so. What of the hundreds of thousands who do not?

We fully believe they *ought* to do so, for their own good, and if we could see them we would tell them so, and explain *why.*

As we cannot, we ask our readers to do this as a double favor to them and to us.

Last Autumn we prepared the largest and best assortment of Premiums ever offered—valuable articles to be *presented* to those who take the trouble to invite new readers, and receive and forward the names of both old and new subscribers for 1880.

All those Premiums are still offered to our friends, new and old, and will be offered during March, and until June.

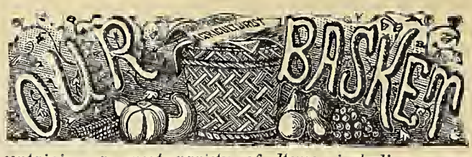
March is a good month to carry on and fill out Premium Lists already in progress, and to start *new* clubs. Many thousands of such names are sent in *every* March.

We invite all our friends to take hold with fresh energy, and secure some valuable articles from our list. (If any one has not the full Premium List at hand, send at once a postal card request, and it will be forwarded free.)

IT WILL PAY A HUNDRED FOLD, to have in *every* neighborhood, at least a few good books on Animals and their Diseases, on General Farming, on Gardening, on Fruits, on Farm Implements, etc., and at least a few Standard Works on other subjeets. These hooks *ought* to be accessible to all for reference in case of need, as well as for reading by all—a sort of circulating or reference lihrary to be in eharge of some one.

Never before was there so good an opportunity AS NOW *to get a collection of such Books at very small cost.* Any ten or more persons contrihuting $1.50 each, will *each* be supplied with the *American Agriculturist* for 1880, and **in addition, one Dollar's worth of Books** will be presented for eaeh Contributor to the fund. The books may be selected from the list of **847** Good Works named in our premium sheet. Where the subscriptions are already sent in for 1880, suhscriptions for 1881 may be added, when desired, to inerease the Library as far as possible. Many new subscribers can also be found. *Every* neighborhood may thus secure sueh a Library. It only needs some enterprising man, young or old, to take hold of the matter as a leader, and he will soon have plenty of *helping* hands, and heads, and hearts. If the Men neglect it, their "Better-halves," or Daughters, always foremost in good works, should take it up.

N. B.—Special.—An Answer to many Inquirers:—*While ten subscribers for one year are preferred to one subscription for ten years,* **yet,** *when specially desired, any subscriber can pay for as many years in advance as he may desire, and count each year as one subscription in making up the Library Club above described. Thus:* $15 *will pay for Ten Years' Subscriptions and Ten Dollars Worth of Books for this spring only.*



containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

What to Plant in the Garden, is always a puzzling question, and especially so since the very late increase in varieties. There is a great choice hoth as to quality and amount of product. Even in a very small garden, a right selection of seeds will make a differenee of many dollars of real value in what is grown for one's own use—the labor, expense and care heing the same. There is a multitude of new things worth many times as much as the old "standard" sorts, both as to quality and yield. But among the hundreds of varieties of new peas, beans, cabbages, lettuce, corn, potatoes, sweet corn, tomatoes, etc., etc., each strongly praised by some seller of seeds, the layman is sorely at loss to know what to select, and quite likely to get many poor things. To all such, the results of 800 trials given by so careful an experimenter as Peter Henderson, will be of great value. See page 86.

Nitrate of Soda, or Chili Saltpetre, is one of the leading mineral fertilizers supplied from the immense deposites in the rainless desert of Southern Peru. Attention was first called to it by Alexander von Humholdt, in the early part of this century, hut it is not over fifty years ago that it was first shipped ahroad to any extent. The Nitrate of Soda industry is to-day a large and rapidly growing one, there being over 250,000 tons of this fertilizer mined and exported per year, though it is not all used upon the land, a large share going to the manufacturers of chemicals as a source of Nitric Acid. It is a formidable competitor of the celebrated Peruvian Guano.

$298,760,867 for Widows and Orphans.—In studying the Statement of the Mutual Life Insurance Company, as given on page 117, we were forcibly impressed with one item, the "Policies in force January 1, 1880," amounting to nearly three hundred millions of dollars, insuring this sum to the survivors at death of the holders of 95,423 policies of insurance. As will be seen, over seven million dollars were paid to the survivors or representatives of insurers during 1879, but the reeeipts were over seventeen millions despite the redueed rates of insurance, and so there is a surplus of over Eleven Millions beyond the amount needed to render safe and secure the policies in this Company.

The American Agriculturist Fertilizer Experiments.

The Farmer's Own Experiments.

The enterprise first proposed and carried out hy the *American Agriculturist*, has given results of great value. This plan ineluded showing the farmer how to experiment with fertilizers, and furnishing him at cost, or less, with fertilizers of standard quality for the experiments. Some of the reports of last year's experiments, are given elsewhere by Prof. Atwater. Can any farmer who uses fertilizers at all examine these reports, and not see how valuable the knowledge thus gained must be to the experimenter? Would he not gladly have such a knowledge of the requirements of his own soil, as these farmers have of theirs?

Can there he any stronger evidence as to the folly—the wastefulness, of the promiseuous hit-or-miss use of fertilizers? It is just as important to know what the soil does not need, as it is to know what it does require, and what may be applied to it with profit. This knowledge ean only he obtained from the soil, and through the medium of experiments. So well satisfied are we of the utility of the experiments already made, that we propose to continue them the present year. We eommend Prof. Atwater's aecount of last year's experiments to the attention of every farmer. If the reader would have a similar knowledge of his own soil, we can provide him with the means of acquiring it at a very small outlay. The full explanation of the plan will be given next month; it will not, however, he essentially different from that followed last year, and which was described on pages 128–129 in April 1879.

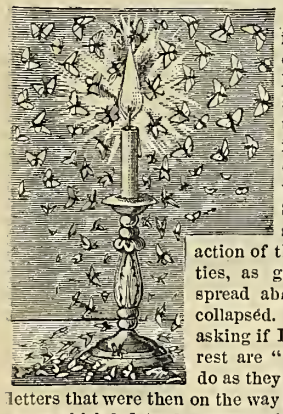
The Experiments for 1880.

As some of the details for this year have not been decided upon, a full explanation will not he given until next month. It is not probahle that there will be any essential variation from the methods as given in April 1879, and those of our readers at the South, where the season for work is already quite advanced, who wish to consider the matter earlier, may take last year's work as a general guide. The prices of the pareels may, or may not be, slightly advanced, owing to the general higher cost of most materials.

Off Color.—At a sale of a superior herd of Jersey cows, a great pecuniary loss was sustained hy the owner, because the animals did not have the fancy superficial marks, now made so much of hy the ruling spirits of the Jersey Herd Books. Black tongues and hlack switches are not strictly Jersey marks—many of the best of that breed do not have them. Breeders should rememher this, and look to the milking and hreeding qualities of a dairy cow, as of the most importance, and banish the expression—"Too much off color to be fashionable."

Trouble in Churning is frequently complained of in winter. Much of the trouble is dne to a neglect of the temperature which can not be told with any approach to accuracy except by nsing a thermometer. If the cream is brought into a warm room until the thermometer shows it to stand at 60°, we rarely find any difficulty. In old times the cream was thonght to bc bewitched, and as the power of a horse-shoe to keep witches away is well known, it was nsed to drive the witches from the chnrn. The horse-shoe was heated red hot and dropped into the cream in the churn. It drove the witches away when it brought the cream to the right temperature.

Sundry Humbugs.



A wonderful change indeed has come over our correspondence. But a few weeks ago and we could he sure that a large, and rapidly increasing share of all of the editorial letters would have reference to Stoek Speculations. So soon as the news of the action of the Post Office authorities, as given last month, was spread abroad, the whole thing collapsed. We get no more letters asking if Lawrence & Co. and the rest are "responsible," or "will do as they agree." Only the few letters that were then on the way reached us. The movement which led to the suppression of these hogus concerns, was taken by the Law Committee of the Stock Exehange, but their doings have heen confirmed

IN A SERIES OF STRONG RESOLUTIONS

adopted by the Stock Exchange itself, which has given the Law Committee more power to act on behalf of that body. ....The Post Office Department is doing wonders in the way of the suppression of frand. The shutting up of these stock swindlers is but a small portion of its good work; it has made the way of the lottery transgressor so hard, that he has been obliged to go over to Canada, and we find the Louisiana State, the Royal Havana, and the Kentucky State Lotteries in Montreal, where they

DEFY THE LAWS OF THE UNITED STATES.

The following wriggle and squirm which heads their circular, shows how badly they are hurt.

"To The Public: In view of certain new and recent regulations by which the United States Postal Authorities assume to supervise and decide what class of *mail* matter shall be sent to the citizen, thereby arrogating to themselves a right to interfere with the private correspondenee of American freemen, which would not be tolerated by any monarehy in Europe, we have established a General Agency for the sale of tickets in all legalized and reliable Lotteries outside of their jurisdiction."—Merely another illustration of the fact, that "No man e'er felt the halter draw, with good opinion of the law." So far from there being any "new and recent regulations," it only happens, to the great discomfort of scamps of various sorts, that we have a Post Master General who thinks it his duty to enforce the laws made by the representatives of "American freemen," for which these chaps profess so mneh sympathy, (at the rate of $10 a package of tiekets), and npon whom their bosh ahont "Monarchy in Europe" is wasted. It isn't the "American freemen" who are at all troubled. It is you

VIOLATORS OF THE LAW,

who feel the pinchings of a remarkahly tight shoe..... Jnst as a welcome rain starts into a new growth the weeds as well as the crops, so does the return of "good times," set on foot fraudulent schemes as well as honest enterprises. The miuing industry is probably on the eve of a period of development greater than has ever before been known, and taking advantage of this, all sorts of schemes, with no other metallic hasis than hrass, will be plaeed before the puhlic. A scheme, with its office in New York with a full outfit of President, Sec'y., and a strong team of Directors, is neatly printed, and the circular shows conclusively, that a few of its $10 shares would soon make one ricb, hut the names of the people, are

NOT IN THE CITY DIRECTORY!

We like better the "Shakspeare" mining circular, which does not give the name of a single person, but eompensates for these omissions by being headed with the somewhat startling announeement that "The Early Bird Catehes the Worm." Our advice to the worm is to keep out of the way.....It seems necessary to repeat our warning about

MURDEROUS ILLUMINATING OILS.

See what was said last month about selling recipes with "rights" for people to make a so-called oil out of benzine....We gave in October last an engraving of a "Solargraph Watch," hut that eost $1—while here is a "Time Indicator" of which one can get four for that price, and can afford to have, as they say in Texas: "any dimensions of time." A "Time Indicator" is advertised for 25 cents. Whoever sends that snm receives a card of the size here given. On one side are neatly printed the lines and figures shown in the engraving. At *A* is a piece cut so as to turn up and form the *gnomon*, or part of the dial that casts the shadow; a thread with a small hrass ring at each end to keep it in place slides in a slit where the months are marked. One has only to set it right when the sun shines—and there it is. This "Indicator" if it doesn't tell the time,

DOES GIVE A WHOLESOME LESSON.

Upon the back of the card there is printed as follows:

"Notice.—Out of every hundred that order this valuhle little novelty, there is generally *one* that finds fault hecause he failed to receive an elegant watch prepaid for 25 eents. Of course, if any one expects a 'gold watch full jeweled,' they will find themselves slightly disappointed; hut if they expect only the value of their money, they will get it in the article herewith sent."

That lesson is one that a vast number of grown people need to learn, and very cheap it is at 25 cents, with the "Pocket Time Indicator" in the hargain. If some people would only learn that other people do husiness to make money, and that one way to make money is

TO SELL THINGS FOR MORE THAN THEY COST,

a vast deal of tronble would he saved. To illnstrate: some rifles are advertised at the very low price of $4.50, and great numhers write to ask us abont the rifle. One would think that no help was needed for a person to decide whether he had any use for a $4.50 rifle. Every one old enough to be trusted with a firearm ought to know that he will not get a $50 rifle for $4.50. It is not in the nature of things that he will get anything that is worth more than what he pays for it. No one can do a profitable business at selling for 75 cents that which eost him 100 cents, and those who arc in business do it for profit. A great many feel that they have been hardly used when the thing that they huy is worth just ahout the price charged for it and no more....We have occasionally in these columns cautioncd persons in visiting cities to

AVOID ALL ADVANCES OF STRANGERS.

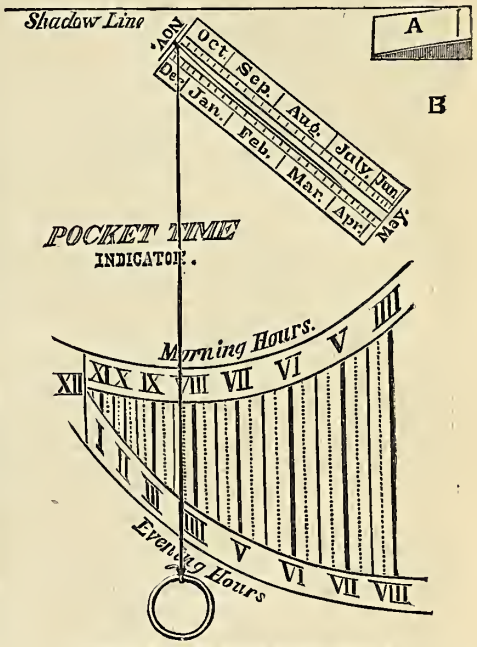
An illustration of the necessity for observing this occurred not long ago in New York. A yonng man from the country was asked hy a plausible stranger to do him a favor. There was to he a horse auctiou at which a very fine horse that stranger wanted was to be sold. He, stranger, was known as a horse-dealer and jndge of horses, and if he bid upon the horse, others would bid higher, but the young man, heing unknown, could huy said horse very low—he, stranger, would pay $200 for the horse, and young man might buy it for as mnch less as he could. A nice offer, but yonng man had no money. "But you have your watch and chain worth $200—huy the horse, tell auctioneer you have to go to your hotel for the money, and will leave your watch until yonr return; you have only to hring the horse round the corner into the next street and get the money." The plan was carried out, the young man hid off the horse at $150—would go for his money, left his watch and chain, delighted with the idea of making $50 so readily, led the horse around the corner into the next street—hut stranger was not there; waited, hut stranger did not eome—waited longer, no stranger; at last went back to place of sale—no one there! At length it hegan to dawn on the young man that the horse was not the only thing sold. He was out a valuable watch and chain; was *in* a horse worth all the way from $10 to $15, and a lesson ahout

AVOIDING THE ADVANCES OF STRANGERS,

which was worth all he paid for it.....It is a common trick of quacks travelling in the Western States, to claim to represent some Medical College in N. Y. City, or else to helong to some Medical Institute. We have already shown that no Medical College with a right to the name, ever sends out travelling doctors; the very fact that one claims this, stamps him as an impostor. With Medical "Institutes," the case is different. One man may call his doctor shop an "Institnte." There is a chap going ahout in Ohio, representing the

"GREENLEAF MEDICAL INSTITUTE"

of New York City, and his circnlar has much to say about "Dr. Greenleaf." Friends have written to know about this Dr. Greenleaf and his "Institute." The fact that no location except the indefinite onc of "New York City," is the most remarkable display of modesty. This "Institnte," is an illustration of the truth of the proverh, "What is wanting can't he numbered."—As there is no such Institute, the quack who "can read diseases by the tongue," fully represents it.....Last month we spoke regretfully that our beloved Eddie Eastman had passed out of sight. We were mistaken; a friend sends us a New Jersey paper, with Eddie's picture all in his Indian



THE "POCKET TIME INDICATOR."

rig. We have hopes of Old Mother Noble: who knows but *he* may turn up? We always had a half way regard for Old Mother Noble; he didn't like what we said ahont him, and came in like a man and said so....The taking of the census will open the way to frauds of various kinds, against which people should be on their guard. Just as we close this page the information comes that one chap—or concern—has already begun operations, by opening

A CENSUS INFORMATION BUREAU,

and advertisements have been sent to papers all over the West, which read thus:

"Persons (regardless of politics) desiring situations as Enumerators of the forthcoming Census, can obtain all necessary information by addressing us. One or more, according to population, required in each township. Good salary to competent men. Address

CENSUS INFORMATION BUREAU,
No. — Street, Chicago, Ill.

Enclose 25 cents to insure answer and pay for stamps and blanks."

That is very neatly done; observe that nothing is promised—nothing is very definite ahout it except that 25 cents is to be sent, and thousands would be the greenhorns who sent, had not the Postmaster at Chicago the power to tell C. I. Bureau, Esq., that he can't have any letters at that shop.

An Unanswerable Letter is one that we have from a young man, who gives us an account of his life and present occupation, which he dislikes, and asks us to tell him what business he had better undertake, and moreover wishes us to find him a situation. We have many times before had requests to find the writers situations, hut we think that this is the first time we have been asked to decide upon the business one is fit for, and put him into it besides. With every disposition to aid sueh persons, it is simply impossible. We can't help thinking that if one does not know what he is fit for himself, he will never find that any one else can discover it.

Asbestos Liquid Paints.—Last spring we made a favorable mention of the Ashestos Liqnid Paints, after two year's experience with them. Now, after another years' exposure to the weather, we can confirm that report—indeed, we can see no appreciable ehange dnring the year, the surface remaining as hard, and as free from "chalkiness" as before. The durability of the paints, as shown by onr test, is well established. That they are easily applied, and "cover" well, is shown hy their use on elevated rail roads, as the immense contracts for these roads would not have been made, nnless these important points had heen satisfactorily shown. The makers claim, and with good reason we think, that the covering qnality of their paints is due to the fact that, after mixing them to produee the desired colors, they are again ground, and that this second grinding, brings the oil and pigments into more intimate combination, and gives an nniformity of consistence, not to be attained hy mere mixing. The paints are furnished of any desired shade or tint, and in a condition to be applied at once, without any previous preparation.

Pleasant Subscriptions—Far off Friends.—Few outside of the business office have any idea of the wide range of circulation of the *American Agriculturist*. Here is an item or two: For years past the largest number of subscribers, in proportion to population, have come from Washington Territory, north of Oregon. Over 3,500 copies have gone by mail to subscribers in New Zealand, directly under us—that is, on the opposite side of the world. On Feb. 4th, a single letter called for 80 subscriptions for Barbadoes in the *West* Indies, while a single previous letter contained 79 subscriptions from Nyne Tal in the *East* Indies, a thousand miles or so northwest of Calcutta; and so in much the same way we might go round to every habitable part of the world.

Notes from Shaker Village, N. H.—The Shakers are such good farmers that we wish they would write oftener. We gather the following from a letter from the Family in New Hampshire. Bro. John Bradbury kept 29 hens the past year. He obtained from these 4,500 eggs, and raised 58 chickens, "He modestly says others in the poultry line may have done better"—we wonder who?....Henry C. Blinn writes that brother R. Woodward is rather proud of his stock, that he has a Jersey bull, 10 months old, that weighs 598 lbs., a Durham bull that, at 9 months, weighs 725 lbs., and a heifer of the same breed that weighs 615 lbs.—But the Shakers are noted for feeding every thing well, whether it runs on two or on four legs—is with or without feathers.

Oil Stones in N. Carolina.—In the article in Dec. last, describing the manner of making whet-stones, it was stated that *Novaculite*, as the mineral is called, is found, among other localities, in North Carolina. Mr. W. B. Phillips, Assistant in the Experiment Station at Chapel Hill, writes to say that the most noted locality of the mineral is about seven miles from that place. There are other localities in Person, Anson, and Montgomery Counties, but that at Chapel Hill is of superior quality. There has been no regular working of the quarry.

Leached Ashes.—Potash is the principal fertilizing constituent of ashes, and the one that is removed by leaching. The leached ashes contains about one-fifth the amount of Potash of the unleached, the Phosphoric Acid, Lime, Magnesia, etc., remaining about the same in both. A bushel of leached ashes contains not far from one pound of Potash, worth 4 cents, and about the same amount of Phosphoric Acid, worth 7 cents. Allowing something for the Lime, Magnesia, etc., leached ashes is worth in the neighborhood of 12 cents per bushel. If the unleached ashes contains 5 pounds of Potash per bushel, they will be worth not far from 30 cents. A hundred bushels of leached ashes per acre is a good application, and one that is lasting in its effects.

Mulching a Hedge.—"M. C.," Albion, Ill., has been told that mulching an Osage Orange Hedge with sawdust is preferable to cultivating it, and asks if straw will not answer for this use. Undoubtedly it would; so long as the material used as a mulch contains nothing injurious it makes little difference what it is, the operation of the mulch being wholly mechanical. Several years ago it was stated that in some of the western nurseries where sawdust was used for mulching, a fungus growth started in the sawdust, which, it is said, injured the young trees. If this is true, straw would be preferable to sawdust. Our correspondent asks if the straw should be partially rotted.—No; ordinary straw from the stack. In absence of straw, tan-bark, swale hay, sorghum begasse, leaves, chips, or whatever cheap material that will cover the ground and prevent evaporation will answer. He asks: "Should they be mulched when planted, or be cultivated one year?" Mulch at once.

The New York Horticultural Society holds its meetings on the first Tuesday of each month, at 2 o'clock P. M., at "Republican Hall," at the junction of Broadway and Sixth Avenue, a place easily reached by both elevated and surface railroads. There is always something interesting to be seen at these meetings, and sometimes the exhibition of flowers, plants, fruits, etc., is really very fine. The exhibitions are free to all, and not only our many city readers, but our friends from abroad who may visit the city at the beginning of any month, should bear these interesting meetings in mind.

Some Corn in Illinois.—The corn crop of the single State of Illinois for the year 1879 is reported to be **305,813,377** bushels, and estimated to be worth $97,483,052, or about 31¼ cents per bushel. It is difficult for the mind to take in the full magnitude of these figures. Here are some calculations that will help the conception: Load this corn upon wagons, 40 bushels to the load, and start them off on the road so near together that there shall be 100 teams in every mile. The line of wagons carrying this one crop of Illinois corn would stretch away 76,453 miles, or *more than three times around the world!*—Again: Load this crop upon railway freight cars, 285½ bushels or about 8 tons to the car, and make up these cars into a continuous freight train, allowing 30 feet of track to each car. The train would extend 6,080 miles, or nearly twice across the continent, from the Atlantic to the Pacific Oceans!—Again: Suppose we put this corn crop into a *square bin* 20 feet deep. Let the arithmetical young readers of the *American Agriculturist* reckon how large this bin would be each way. Also, how many acres it would cover.—Also, how many pounds of pork it would make if given to pigs weighing 100 lbs. each when they begin feeding upon the corn, and 250 lbs. when killed for pork.

Assorting Apples.—At this season of the year apples will be decaying to a greater or less extent, depending upon the variety, care in picking, handling, storing, etc. If kept in barrels, they may be turned out and the decayed ones removed, after which these that remain had best be spread upon shelves in thin layers, where they may be kept dry, and where the "specked" ones can be removed so soon as they are affected. In this way sound fruit may be had until late in the spring.

Bee Notes for March.

BY L. C. ROOT, MOHAWK, N. Y.

As spring approaches the risk of injury to the bees by any disturbance is much greater than earlier in the season; hence we should keep the bees entirely undisturbed, or as nearly so as possible. A recent writer has truthfully remarked that it may be said of some colonies that they were "disturbed to death." Over anxiety to examine into the condition of the bees, and to *do* something which might make them winter well, has brought failure to many an inexperienced bee-keeper.

QUESTIONS AND ANSWERS.

WOOD FOR HIVES.—A correspondent in Bridgeport, Conn., asks: "What kind of wood is best for hives and frames. Would pine answer?"....Pine is the very best lumber that we have ever used for this purpose, and we know of nothing better.

TRANSFERRING COMBS.—Another writes: "Please let me know how to fasten combs that are transferred from box-hives into frames."....The process of transferring is described in the Notes for May 1876, or if a more full and illustrated description be desired, he will find it in Quinby's "New Bee-keeping," where it is given in detail.

WINTERING BEES.—A correspondent at St. Johns, N. B., misunderstands our directions for wintering bees. If he will follow closely our instructions as given from time to time in these Notes, and especially those given in our new edition of Mr. Quinby's work on Bee-Keeping, he will find that we urge the necessity for keeping the room containing bees warm and free from moisture. His idea of putting a stove in the room with the bees is open to objections. The stove should always stand outside of the room to avoid disturbing the bees when building the fires. The pipe may be allowed to pass into the apartment if not too near the hives.

DO HONEY-BEES INJURE SOUND FRUIT?—This question is one that comes very frequently, and from all parts of the country. It now comes to us from New Jersey, though not in the form of a question, so much as an unqualified assertion, a most positive statement, that unquestionably honey-bees do destroy fruit. This gentleman says that all of his early peaches were destroyed, as were also two-thirds of his grapes, and that "first, last, and all the time" it was the work of honey-bees. The statement is a most positive one, and were it not that we have had extended experience in the matter, and made it a subject of particular study and investigation, should be disposed to hesitate somewhat in taking the part of the bees. That honey-bees are often a source of annoyance to fruit growers, is freely admitted, as it will be by every one who is well informed on the subject. That bees, in times of scarcity of honey, will eagerly take the juice of any punctured fruit, is also a well understood fact. Dealers in fruit and owners of cider mills are often much annoyed by bees. Whenever the skins of fruit, from the occurrence of hot weather after a rain, or from any other cause, become broken, the bees will at once suck the juices from the fruit. I have on my place a Creveling grape-vine, which stands near the corner of a building, in such a position as to be seriously affected by the wind; as a consequence, the fruit becomes broken, and the bees of course sip the juice from it as fast as it is exposed. I have never picked a perfect bunch of grapes from this vine, yet I have many other vines of the same variety, standing in ordinary position, which are entirely undisturbed by the bees, and yield fruit in abundance. The late M. Quinby was not only interested in bees, but also had much interest in fruit growing, having several hundred grape-vines of different varieties. He depended upon these for a good share of his income in seasons that gave a poor yield of honey. If bees were capable of puncturing fruit, it might reasonably be expected that during those seasons, if at all, when little honey could be collected, bees would be more than ever untiring in their efforts to puncture the fruit. Here was one earnestly endeavoring to find the truth in this matter. He was interested in both bees and fruit, and of course would investigate without prejudice. As a result of his investigations he repeatedly stated that he found the bees unable, *in a single instance*, to puncture sound fruit of any variety whatever. In 1869, while yet associated in business with Mr. Quinby, our yield of honey was an entire failure, while, on the other hand, our grape crop was particularly fine. At the very time that the fruit was ripening, the bees were actually dying of starvation. Yet at this season, when the bees should resort to the fruit if ever, and when the fruit was far more perfect than usual, and consequently more tempting, in this season, even a less proportion of it was disturbed by the bees than during ordinary seasons. We made our observations on this point with the closest care, yet we were unable to find a solitary instance in which the bees attacked or disturbed the sound fruit in any manner, yet there were hundreds of colonies within easy reach of the vineyard. There is one important thing to be remembered in this matter. Nature has assigned to the honey-bee certain work, and provided it with proper implements with which to execute it. The bee has no piercing and tearing jaws, or any other organ with which it can rupture the skin of a fruit. On the other hand it is a part of the occupation of hornets and wasps (or the majority of them), to build their nests from partly decayed wood, which must be torn from rails, boards, etc. These insects are provided with cutting jaws which are very strong, and of such a form that they can tear even the toughest fruit skins with ease. That careful observer, the Rev. L. L. Langstroth, investigated this matter many years ago, and in his work on "The Honey-Bee" is most emphatic in his assertion that bees are not the aggressors in the attacks upon fruit, and to confirm his statement gives engravings showing the jaws of both the Honey-Bee and Honey Hornet, magnified. These engravings

1.—HONEY BEE'S MOUTH.

2.—HORNET'S MOUTH.

are here reproduced. Figure 1 shows the blunt and unarmed mouth-parts of the honey-bee, and figure 2 the corresponding parts of the honey-hornet.

It is earnestly hoped that, before advising the destruction of bees in any neighborhood, our correspondent will first investigate more closely, and see if the fruit disturbed by the bees is not first injured by other causes. The views here given are not only the result of our own personal experience and observations, but are sustained by many other careful observers whose interests were enlisted on behalf of fruit as well as bees.

Queen Bees by Mail.—At the last meeting of the National Bee-Keepers' Association, Prof. A. J. Cook was appointed to induce, if possible, the Post-Office Department to rescind the order excluding queen bees from the U. S. mail. Prof. Cook has been successful, and hereafter the queens can be sent by mail—a very important item to many, especially those living at a considerable distance from an express office.

Pleuro-Pneumonia in Pennsylvania.—Under the provisions of the Act of Assembly passed last winter, Governor Hoyt placed the whole matter of dealing with Pleuro-Pneumonia in the hands of Sec'y Edge of the Board of Agriculture. Since the first of April, 110 animals have been killed; 31 herds containing 595 animals have been closely quarantined and regularly visited by Veterinary Surgeons; when any animal showed unmistakable symptoms of infection, it was at once appraised and killed. In addition to this, a large number of herds supposed by their owners to be infected, and so reported by them, have been examined, and all cattle imported from Europe have been placed in the hands of the State authorities for quarantine. Since April last, the cost of the work has not exceeded $2,750, of which $1,200.50 has been paid for animals appraised and killed. At present but 8 herds are in quarantine, and of these four are considered clear of the disease, but not beyond the danger of communicating it to other stock. All herds are kept in quarantine for three months after the termination of the last case of disease.

The Michigan Agricultural Society has just closed its accounts for the year, and with its receipts for 1879, at $52,447, disbursements $30.597, and a balance on hand of $21,850, the organization is on a firm financial foundation. The State Fair is set for September 13-16, but as yet the place of holding it is not designated.

(*Basket Items continued on page* 115.)

Science Applied to Farming—LV.

Field Experiments with Fertilizers.—What Farmers have been Doing.

That the intelligent American farmer may be a good observer, is a fact that has been impressed upon me more forcibly than ever by the reports sent me of Field Experiments with fertilizers last season. As will be remembered, the *American Agriculturist* has proposed, for two seasons past, some series of experiments, and arranged to provide the readers with samples of fertilizers for the purpose, of tested quality, and at prices just covering cost. Each article was put up in a small bag, containing enough for 1/10 or 1/20 acre, and numbered A. B. C., etc. Every bag had a label giving amounts and proportions of its ingredients. With each lot was sent a pamphlet, containing explanations and directions for the experiments, and blanks on which any who might care to take the needed trouble, were requested to note the results and forward them to me. The firms by whom the fertilizers were put up, supplied numerous sets to their customers; the Vermont Agricultural College distributed a number among the farmers of that State; the Maine Agricultural College did the same, and made several series of experiments on its own farm. Prominent farmers in various parts of the country joined in the enterprise, so that the trials were made from Canada to Florida, and from Maine to Kansas.

I may say that both the *American Agriculturist* and the dealers displayed a great deal of enthusiasm in the undertaking, doing this, as I happen to know, at pecuniary cost to themselves, and with no prospect of gain other than would come with the credit for encouraging the enterprise.

The Reports and their Value.

The blanks for reporting experiments were sheets, about 12 by 19 inches, having spaces for noting, on one side: (1) Description of soil; situation, kind, texture, dry or wet, depth of surface soil, character of subsoil, etc., etc.—(2) Previous treatment, manuring, and yield.—(3) Weather during experiment.—(4) Fertilizers and how applied.—(5) Method of sowing, planting, tillage, etc.—(6) Other details and remarks. The other side was devoted to details of size of plots, dates of planting and harvesting, amounts, quality, and value of produce in grain, roots, tubers, stalks, etc., by pounds and bushels; calculated profit and loss, etc. Nearly seventy of these reports are before me. Some are brief, most are well filled, and many entirely so, while several have additional interesting and suggestive statements covering a number of pages of foolscap, for which there was not room on the blanks.

From a detailed account prepared for the forthcoming Report of Conn. Board of Agriculture, I condense a few statements of plans and results.

Experiments for Testing Soils.

The principle upon which these experiments is based is briefly this: The chief office of fertilizers is to supply the plant-food that our crops need and soils fail to furnish. It is not good economy to pay high prices for materials which the soil may yield in abundance, but it is good economy to supply the lacking ones in the cheapest way. The most important ingredients of our common commercial fertilizers are *Phosphoric Acid*, *Nitrogen*, and *Potash*, because of both their scarcity in the soil and their high cost. It is in furnishing these that Guano, Phosphates, Bone Manures, Potash Salts, and most other commercial fertilizers, are chiefly useful. Experiments were suggested in which the three ingredients named were to be used, each by itself; two by two, and all three together.

To test the effects of these materials on different soils, was the special, and their actions with different crops the general purpose of these experiments. The ostensible object was to work upon farmers' soils; underneath this lay in my own thought a deeper purpose, to work upon their owners' minds.

Soils Chiefly Needing Phosphoric Acid.

In Mr. Bartholemew's corn experiment, No. 2, every plot which got Phosphoric Acid brought a good crop for the season; every one without it failed. The Nitrogen and Potash both increased the yield, but reckoning a bushel of corn with its stalks at 80 cts., neither increased it enough to pay the cost. This experiment was made on a field adjoining that of the experiment reported for 1877 and 1878, in which the crop rose and fell with the Phosphoric Acid, while it paid very little attention to the other ingredients. Indeed, in Mr. Bartholemew's experiments, which have now continued for three years, covered nearly one hundred plots, and are among the most instructive ever made in this country, the testimony in favor of Superphosphate, and against the other materials for corn is unanimous, but for potatoes, the complete fertilizer has proved profitable. And for corn, Superphosphate and farm manure together have brought the best results. A number of other experiments have equally striking results with Superphosphate. There are, however, many

Soils which respond well to Potash Salts.

In Mr. Sage's experiment, No. 24, for instance, no plot without Potash gave a profitable increase, and no one with it failed to do so. This tallies well with his experiments on other parts of his farm in 1877 and 1878, where the Potash Salts paid more than tenfold their cost. The mixture of Superphosphate and Potash Salt, F, which Mr. Sage estimates as costing no more applied than the simple hauling of stable manure to some of his fields, has uniformly brought from 60 to 70 bushels of shelled corn per acre.

The Complete Chemical Fertilizer.

No. G. has brought by far the best results. It was generally the most profitable of all with potatoes, and often so with corn and other crops. The chemical fertilizers have not only brought larger yields than the farm manures, but have also proved more certain, both in favorable seasons and in cold, wet, and drouth.

Cases in which None of the Fertilizers were Particularly Useful

are common; No. 7 is such a one. Indeed, these experiments illustrate very forcibly a fact which few farmers appreciate, namely; that there are a great many soils which will not pay for the use of artificial fertilizers, at least until they are better tilled, irrigated, drained, or otherwise improved. In short, the reports before me are full of illustrations of the important facts that:

1. Soils vary widely in their capacities for supplying crops with food, and consequently in their demands for fertilizers.

2. Some soils will give good returns for manuring; others, without previous amendment, by draining, irrigation, tillage, or use of lime marl, or otherwise, will not.

3. Farmers cannot afford to use commercial fertilizers at random, and it is time they understood the reason why.

4. The right materials in the right places, bring large profits. Artificial fertilizers rightly used, must prove among the most potent means for the restoration of our agriculture.

5. The only way to find what a soil wants, is to study it by careful observation and experiments.

6. Success in farming, as in other business, requires the use of brains. W. O. ATWATER.

Samples of Field Experiments with Fertilizers, 1879.

Exp't. No.	Name.	Soil.	Previous Treatment.	Weather.
1.	J. FLANAGAN, Paola, Kansas	Clay	Worn down by wheat and corn	Warm, drouth.
2.	W. I. BARTHOLEMEW, Putnam, Conn.	Dark loam, compact subsoil	Old meadow	Cold, wet.
6.	W. C. ATWOOD, Watertown, Conn.	Sandy loam, hardpan subsoil	Rye after buckwheat	Very favorable.
7.	J. M. MANNING, Taunton, Mass.	Sandy loam, sandy subsoil	Old meadow	Favorable.
24.	CHESTER SAGE, Middletown, Conn.	Gravelly loam, compact subsoil.	Old meadow	Favorable.
27.	PROF. W. H. JORDAN, Orono, Maine.	Heavy clay, compact subsoil.	Same experiment in 1878	Cold, wet.
31.	CHAS. H. COLE, Lunenburg, Vt.	Loam	Oats after timothy and clover	Favorable.

NUMBER OF BAG		0	A	B	C	D	E	F	G	H		00
KINDS AND AMOUNTS OF FERTILIZING MATERIALS APPLIED PER ACRE.		No Manure.	Nitrate of Soda, 200 lbs.*	Dissolved Bone Black, 300 lbs.	Muriate of Potash, 200 lbs.*	Nitrate of Soda, 150 lbs. Dissolved Bone Black, 300 lbs.	Nitrate of Soda, 150 lbs. Muriate of Potash, 200 lbs.*	Dis. Bone Black, 300 lbs. Muriate of Potash, 200 lbs.	Nitrate of Soda, 150 lbs. Dis. Bone Black, 300 lbs. Muriate of Potash, 200 lbs.*	Plaster, 200 lbs.	Farm Manure.	No Manure.
VALUABLE INGREDIENTS APPLIED PER ACRE.			Nitrogen, 32 lbs.	Phos. Acid, 48 lbs.	Potash, 100 lbs.	Nitrogen, 24 lbs. Phos. Acid, 48 lbs.	Nitrogen, 24 Potash, 100 lbs.	Phos. Acid, 48 lbs. Potash, 100 lbs.	Nitrogen, 24 lbs. Phos. Acid, 48 lbs. Potash, 100 lbs.	Sulphuric Acid and Lime.	Complete Fertilizer. Variable.	
COST PER ACRE †			$7.50	$5.25	$4.50	$10.88	$10.13	$9.75	$15.38	$0.80	var'ble	
YIELD PER ACRE		bu.	bu.	bu.	bu.	bu.	bu.	bu.	bu.	bu.	bu.	bu.
CORN.	Experiment No. 1	18.5	20.3	20.3	17.3	19.2	12.9	17.6	20.1	13.0		
	Experiment No. 2	7.7	7.4	36.5	7.7	41.4	7.1	42.0	45.7		36.0	8.5
	Experiment No. 6	8.0	14.7	23.3	29.4	38.7	38.2	40.2	80.2	10.6	90.5	
	Experiment No. 7	11.3	11.2	16.6	11.0	18.9	10.0	13.3	15.9	4.5	23.9	
	Experiment No. 24	42.0	49.2	46.0	59.0	41.1	58.0	63.4	60.8			44.8
Average of 26 *Experiments in* 1879		24.6	30.9	33.4	31.7	40.7	34.0	40.5	47.1	31.4	43.0	29.6
Average of 27 *Experiments in* 1878		24.6	30.4	33.5	33.3	39.1	39.6	42.9	48.6	28.9	45.9	24.4
POTATOES.	Experiment No. 27	37	49	38	73	47	59	111	129	35	116	
	Experiment No. 31	150	180	175	215	220	260	360	370	150	470	
Average of 9 *Experiments in* 1879		50.7	75.3	88.8	85.2	98.2	83.6	121.1	141.2	69.2	131.6	55.0
Average of 9 *Experiments in* 1878		100.0	103.0	123.4	129 6	143 2	105.0	153.4	177.3	106.0	132.9	81.5
AVERAGE OF EXPERIMENTS OF 1878 & 1879. ‡ CORN. 37 Experiments.	Average Produce	21.3	30.1	34.0	38.7	40.0	23.4	41.5	47.9	21.8	43.5	
	Average Increase		8.8	12.7	17.4	18.7	2.1	20.2	26.6	2.5	21.2	
POTATOES. 14 Experiments.	Average Produce	75.0	85.7	97.9	109.0	114.9	92.0	134.9	156.6	87.3	131.9	
	Average Increase		10.7	22.9	34.0	39.9	17.0	59.9	81.6	12.3	56.9	

* In Experiments 2 and 27, 150 lbs. † At market prices, plus $5.00 per ton for freight. ‡ Including only those in which farm manures were tested with the chemical fertilizers.

[EXPLANATION OF TABLE.—The above table will repay careful study. Thus, for example, in Experiment 2, the 150 lbs. per acre of Nitrate of Soda, costing $5.62½, brought no increase of corn: 300 lbs. of dissolved Bone-black (charred bones superphospbated) added nearly 29 bushels at a cost of $5.25; while the two together (D) added 33 bushels at a cost of $10.88, and 150 lbs. of Muriate of Potash with these making the "complete" chemical fertilizer (G), increased the yield by 38 busbels, at a cost of $15.38..... In Experiment 6 this last mixture increased the yield by 72 bushels. While this complete fertilizer was so profitable in No. 6, and the Superpbospbate in No. 2, in No. 24 the Muriate of Potash (C) paid best, bringing about the same increase alone as with the other materials. In Nos. 1 and 7, all the fertilizers were failures; in No. 1 apparently because of drouth; in No. 7 for some unexplained reason. Taking the average of the experiments for 1878 and 1879, the "complete" chemical fertilizer brought the largest crops of both corn and potatoes, excelling the farm manures. The mixture of Superphosphate and Potash Salts brought nearly as large yields of corn and larger of potatoes than the farm manures. As to average profit, among the chemical fertilizers the complete fertilizer (G) paid best for potatoes, and the mixture of Superphosphate and Potash Salts (F) for corn.

Fencing and Fences.

Wooden Fences.

A large number of descriptions, drawings, etc., of wooden fences have recently come to hand. Some of them are interesting, and we shall keep them for further reference and some of them for use in this Journal. Just now we are giving special attention to the subject of *metal* fencing.

About Patents on Fences.

A multitude of inquiries, too numerous to answer individually, come to us from all over the country, some describing well, and some unintelligently, various devices, and asking our opinion if they are "patentable" or worth patenting. In most cases it would require careful, thorough examination at the Washington Patent Office to answer these questions, and we can not undertake such work.

An Important Change of Circumstances—A Great Rise in Price of Iron and Steel.

Since this series of articles on Metal Fences was planned during our summer trip through the West, there has heen a very rapid and great advance in the price of Iron and Steel. In Septemher, 1878, the Standard No. 1 Anthracite pig iron was selling at $16@$17 per ton, and in Septemher last it had only risen to $22@$23—that is, to a trifle over one cent per pound. The last week in January it sold as high as $43 per ton, and to-day (Feh. 6) is quoted at $40@$41—an advance of fully 90 per cent, or nearly douhle since last Septemher 1. This has resulted from the great demand arising from the wonderful revival of husiness that took place as soon as our large crops were secured and the generally poor condition of crops throughout Europe became fully ascertained. This demand enahles iron producers to charge their own prices, and they are realizing enormous profits. Such a state of things may continue for a moderate period, but when all the idle furnaces are in operation, and the new ones projected are in full hlast, prices will be likely to fall back to figures affording only a fair profit. As a very large part of the cost of iron and steel fence materials depends upon lahor, patent royalties, etc., the actual cost of metal fencing has not advanced correspondingly, and will not do so. Yet this rise materially affects, for the time being, the progress towards securing *Iron* Fence *Posts* that can successfully compete with wood for ordinary farm use. But even at the present value of iron, there are, or soon will be found, *iron* posts which will be more economical than to use wood posts at a nominal price.

Iron and Wood Posts Compared.

Suppose we take the present cost of Iron posts at 50 cents each. Several are now offered at this rate and under. The tahles last month (page 51) estimated 100 rods of Post and Board Fence at $100; and of wire fence with wooden posts at $67.25. Taking similar figures we have

FOR 100 RODS OF FENCES:
(Galvanized Steel Wire or Strap, 4 Strands High.)

WOOD POSTS.		IRON POSTS.	
400 Rods Wire, at 11c....	$44.00	400 Rods Wire, at 11c....	$44.00
100 *Wood* Posts, at 12½c.	12.50	100 *Iron* Posts, at 50c....	50.00
400 Staples...............	.75	Labor about............	7.50
Labor about...........	15.00	Total...............	$101.50
Total...............	$72.25		

Two men with a single horse and wagon should distribute the material, *drive* the iron posts and put up 100 rods of wire in two days, at a cost of $7.50. This gives a cost for iron posts over wood of 30 cents per rod (less than 2 cents per foot). But for the increased outlay to start with, we have a *permanent* fence, one occupying the smallest possible amount of ground, one scarcely needing any repairs for half a century, and one indestructible by fire. We are quite sanguine however, that with the present interest and the great activity of inventive minds, we shall very soon learn of some form of iron post that will be hoth effective and cheap, at a cost considerahly helow 50 cents each.

Non-Destructible, Non-Combustible Wooden Posts.

We are glad to learn that hopeful experiments are now heing made towards producing a wood fence post that shall he hoth non-comhustible by any ordinary fire, and practically non-destructihle hy the weather or ordinary decay, and at an increased expense of only a few cents per post. The information is private and confidential as yet, and we can not judge as to the prohahle success, but we do not see why, with the Kyanizing process long successfully practised, and with the new application of ashestos there should not be valuahle results in the direction indicated. Perhaps hy applying such improvements to the cheaper, more abundant varieties of wood, we may get such prepared posts at ahout the present cost of those made from cedar, chestnut, and like comparatively durable timher.

Other Forms of Posts.

A very large number of suggestions have recently come to us in the way of new forms, or supposed new forms, of iron posts. Some of these are covered hy those already before the public; more are impracticable on account of their expensiveness; some are not clearly described; a majority, while sending queries, insist upon their ideas being considered private and confidential until they have further developed them or obtained patents....In figures 22, 23, 24, 25, are suggestions of our own, somewhat in the line of figure 11 (Jan. No., page 10)—and we offer these only as suggestive. The ahove-ground post (fig.26) is to be a simple flat har of wrought iron, say 1¼ inch wide, ⅓ inch thick—or of whatever size may he required for the particular fence to be put up: to he notched or pierced for attaching the horizontal lines; to be 4 to 4½ feet ahove ground, and

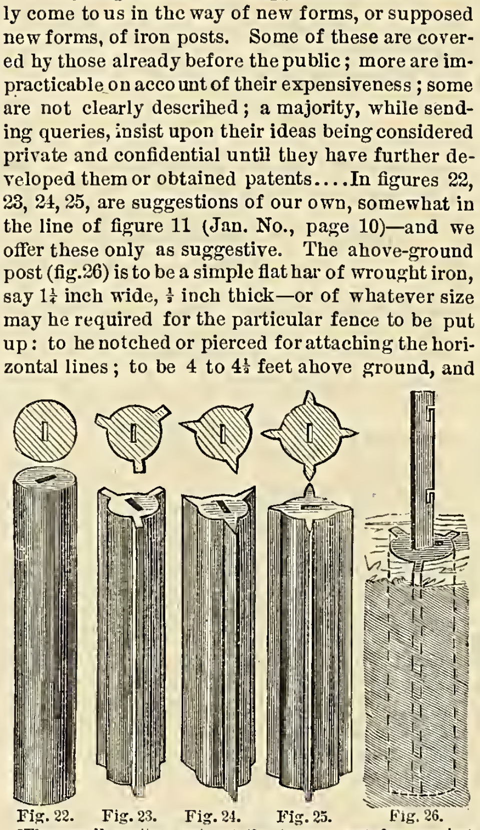


Fig. 22. Fig. 23. Fig. 24. Fig. 25. Fig. 26.
[The small section cuts at the top are not for use, but merely to show the form more plainly.]

extend down as deeply as may he needed by the firmness of the soil, the kind of foot-piece used, the nearness of the posts together and the consequent strain upon each. The ground, or FOOT-PIECE, to he made of clay and hurned the same as hrick, or it may be made of hydraulic lime and sand.—Figure **22** is a simple round tough hrick, say 4 to 5 inches in diameter, and 15 to 20 or more inches long, with an opening in the center to receive the iron bar. A little thin hydraulic grouting will hold it firmly in. If hurned to vitrification it will he as tough as iron, and ahsolutely indestructihle. A post auger will quickly make an excavation for its reception in ordinary soil.—A Foot-piece 4 inches in diameter and 19 inches long would require the same clay as three ordinary hrick of 8x4x2½ inches dimensions.—A piece 5 inches in diameter and 20½ inches long would equal four ordinary hrick in contents.—To save weight and clay, this piece may he made as in figure **23**, the core only so thick as needed, with three flanges projecting an inch or so; or better still like figure 24, with wedge-shaped flanges, as in this form the piece could he driven with a wooden mallet into a hole made to fit the round central core.—Figure **25** shows the same with *four* flanges.—Figure **26** shows the post set with the iron bar.

A Primitive Cast-Iron Post.

Henry Gaylord, of Cheshire, Conn., sends us a description of a very simple iron post, made by Sterling Bradley of that town many years ago. These were merely flat cast-iron pieces, three-fourths of an inch thick or so, three to four inches wide. Holes were dug of any desired depth and width, the posts set in, the holes filled with small cobble stone, and grouting (thin hydraulic mortar) poured in. Boards were used for the running pieces, wire not having come into use. These posts, after standing 20 to 25 years, still remain firm. We give the above as suggestive only. Where small stones ahound and hydraulic lime and sand are readily obtained cheaply, it may sometimes be practicable to use a small single bar of wrought or cast-iron of the strength needed, and fasten it firmly in the ground by putting around its hase the necessary amount of grouting mixed with small stone or gravel. Notches or holes in the hars will serve for attaching the running wires. For general fencing, posts are required that can be quickly *driven.*

Fig. 27 shows a form of iron post manufactured hy A. G. Powell & Co. (see advertisem't). It consists of an upright post of wrought iron, one-and-a-half inch wide, and five-sixteenths of an inch thick; 6 feet long, and notched and pierced with small holes for attaching the running wires. This is driven into the ground, say 20 inches. An angular looped collar is slipped down to the surface of the ground, and two shorter pieces of iron 1¼ inch wide, one-fourth inch thick, and about two feet long, are driven through the collar-piece, as shown in the engraving, to form hraces. This appears like a somewhat effective post—perhaps too expensive for general farm fencing at the present advanced cost of iron. The weight of the whole is about 14½ lbs.

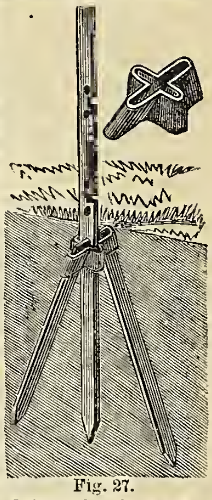


Fig. 27.

An Important Point in Favor of Wire Fences

is referred to hy several of our readers, which, summarized in nearly the language of one of them, runs thus: "I raise winter grain mainly, and my fields are suhject to snow-drifts. Formerly I usually lost a pretty wide strip of wheat along the wooden fences, owing to the heavy snow-drifts remaining so long on a strip two to five rods wide on at least two sides of the field. I have now four ten-acre fields fenced with harhed wire and small cedar posts. These do not check the wind so as to produce snow-drifts, and I save wheat enough to pay the cost of the wire in every two or three crops, while the fence will outlast half a dozen rail fences, I think. Two of these fields adjoin pasture fields, and on the sides next these pastures I have spiked slim long poles upon the posts ahout 3 feet from the ground. While these do not stop the snow, they warn off the animals, and so far I have had no accidents."

Another correspondent writes that his fruit trees were often girdled by mice that found good winter quarters in the snow-drifts along his old wooden fences. Two years ago last summer he suhstituted wire fences, partly barhed and partly plain wire, and has had no snow-drifts and no trouhle from mice, hy taking the precaution to remove or trample hard any considerahle hodies of snow that gathered around the trees; and further, that since the removal of the wood fences the mice have had no breeding places, and they have mainly disappeared, so that this winter he will not take any trouble with the snow around the trees.

Specific Loss and Gain.

A Suhscriher in Central New York, states figures thus: "In autumn of 1878, I sowed winter wheat in a field with a high rail fence on one side, 70 rods long. The snow-drift killed a strip full 4 rods wide, or 280 rods—just 1¾ acre. The rest of the field averaged 24 hushels per acre, and I sold my wheat at $1.45 per hushel. The 42 hushels lost by the snow, were worth $60.90. Here was a loss on one crop of enough to have built a new wire fence, with iron posts, along the whole 70 rods—a fence that would be permanent for a life-time, and need no repairs." ....Another writes from Wisconsin: "I have fields fenced with wood, and others with wire. My observation is, that the latter can on the average be worked at least a week earlier in spring; the former

is wet and cold on the borders, long after the rest, owing to the snow which has been caused to lie in drifts by the wood fence. The wire fence does not produce perceptible snow-drifts."....

Injury from Barbed Wire.

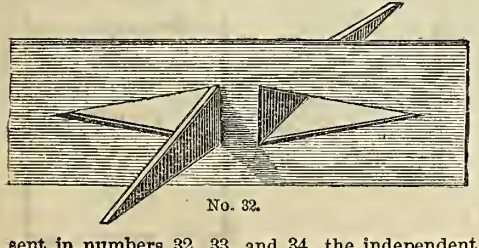
In our closing remarks last month (page 52), we said: "None of the long, sharp-pointed barbs having perpendicular sides, or those nearly so, and none of those inclined in any direction to act partially as hooks, are adapted for use along highways or where clothing will be likely to come in contact with them. None of the above barbs are adapted to small inclosures, or where *valuable* animals are in danger of contact with the long, sharp points of any form. Though they may be so shortened as to remove danger of fatal injury, disfiguring sores and scars will be produced. Something in the form of the 'Brinkerhoff Improved,' with sides so inclined as to prevent catching and tearing, and so short as not to produce deep incisions when struck squarely, will need to be provided."....We repeat this with emphasis, and say further, that while the strongly-barbed wires may probably be advantageously used for the large pastures of the West and South-west, we do not advise their use generally where farms are divided into smaller fields and where valuable animals are kept. For all such locations, strong wires, or straps—perhaps with barbs so blunt as to be incapable of cutting or tearing the skins of horses and cattle, or of tearing the wool from sheep—will come into use. We have received many communications, some detailing injuries, and others approving the barbs, of which the following two are given as average samples:

Mr. R. C. McWilliams, an old subscriber of the *American Agriculturist* in Northumberland Co., Pa., personally gives us items from his experience with barbed wire fence. He has not discarded its use, and does not absolutely condemn it; hopes the embankment described last month (page 52), or some other device, will render it less dangerous. He had a valuable cow that had one leg cut down to the bone, "nearly half off," and the flesh badly torn by the fence barbs. She was a long time in a dangerous condition. A $200 horse had both legs cut, and a wound on the side. He had paid $18 for a Veterinary Surgeon's attendance, had the horse laid up 3 months, and it was not well yet. He thought the present value of the horse might be $50 for ordinary work when fully recovered, though he could only get an offer of $30. His father-in-law, Dr. Jacob Reigard, of Ogle Co., Ill., has a half mile of barbed fence, and though not entirely satisfied with it, does not condemn it.

H. L. Raven, of Travis Co., Texas, writes us: ".... As to the injury to live stock, which seems to be the great objection to barbed wire here, my own experience is that the danger is not of great extent. I have had no serious accidents. Only one horse has scratched itself, though I have put into the pasture horses that had never seen a wire fence. But it is best to be careful and not crowd animals towards these barbed wires until they learn where they are. Barbed wire will be a great boon to Texas, enabling us to put into cultivation large tracts of land that would have lain idle without it...."

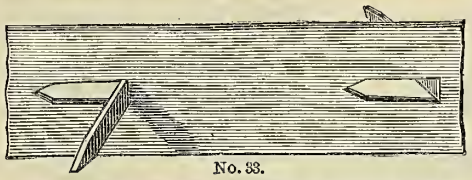
Further Forms of Barbed Fences.

Partly as a matter of curiosity, and especially to stimulate further thought and invention, we pre-

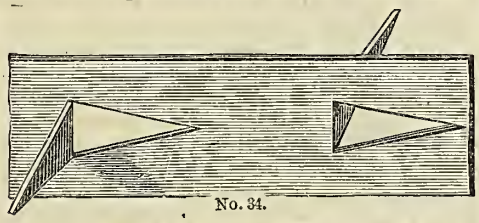


No. 32.

sent in numbers 32, 33, and 34, the independent suggestions of three of our readers, living remote from each other, in different States: **No. 32,** is engraved from a pattern sent us by H. H. Hagerman, of West Windsor, Ohio. Two barbs are formed by puncturing out central portions from steel straps, every five inches, and bending these portions at right angles to the strap on alternate sides, as shown in the engraving.—**No. 33,** comes from a reader in St. Paul, Neb., who withholds his name. It differs from No. 32 only in the *form* and size of the barb, which in the pattern is less than an eighth of an inch wide, and not quite half an inch long. They are 2 inches apart, turned out on opposite sides, and the strap twisted when put up. Our correspondent refers us to Purdum & Reed, of Chillicothe, O., for further particulars.—**No. 34** is from a pattern sent us by Geo. N. Hodgdon, Nashua, N. H. This is similar to No. 32 in the *form* of the barb, but the barbs are cut singly every 2 inches, instead of in pairs every 5 inches. The steel strap is galvanized and twisted in putting up.

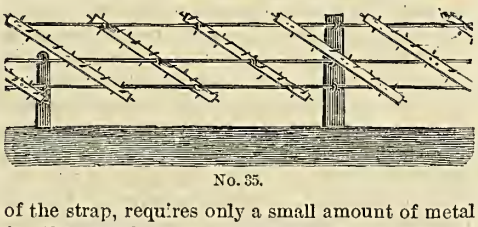


No. 33.



No. 34.

While all three of the above (Nos. 32, 33, 34), are open to the objection of having cutting barbs, the strength of the strap is lessened somewhat in No. 33, and largely so in 32 and 34—fully one-third—and the strap would need to be fifty per cent wider to secure the same strength. The "Brinkerhoff Improved" (No. 19), retains the full tensile strength



No. 35.

of the strap, requires only a small amount of metal for the added barbs, and these can be made so blunt as not to cut or tear.—The prominent advantage of the strap over the twisted wire is that the former is more conspicuous—more readily seen by animals approaching it. Several other forms of barbs, used on wire, can be much modified in length and sharpness without destroying their efficiency.

No. 35.—"King's Thorn-Stay Fence" is one of the varieties of barbed fence we have not before exhibited. It is the ordinary plain wire fence of three strands of No. 9 wire, to which are fastened, with staples, a series of inch square wooden strips, or "stays," set inclined as shown in the engraving, and placed alternately on both sides of the horizontal wires. The staples pass through the stays, and are clinched on the side opposite the wire. The wooden stays are also supplied with pointed barbs. It is claimed that these wooden pieces render the fence visible, support the wires, preventing their being spread apart by animals attempting to crowd through, and that the barbs thus placed are less liable to be seriously injurious. Before the recent rise, these stays were supplied at $2.50 per 100. Their expense will of course depend upon the distance apart they are placed. Aside from any advantage or disadvantage of the barbs, such strips or stays, if thoroughly protected from decay, and without or with barbs, could be applied along plain wire fences already built, and be placed a few inches or a few feet apart, as desired. These stays are made in Iowa by the Baker Manufacturing Company.

The White Pine Weevil.—A few insects are of benefit to the plants upon which they feed. Mr. A. S. Fuller, one of the editors of the "American Entomologist," cites the White Pine Weevil (*Pissodes Strobi*), as an insect of undoubted use to the trees upon which it makes its home. The grub of the weevil perforates and kills the leading shoots of young pines and spruces, thus checking the upward growth of the main stem, when the branches below bend inward, and grow more vigorously, thus causing the tree to assume a better shape than it would otherwise—a sort of natural pruning which such trees often need but seldom get. Mr. Fuller says: "Since the advent of the Pine Weevil on my place many of the Norway Spruces have been greatly improved in their appearance by the almost annual destruction of the terminal or leading shoots, and no one would question the benefit of this kind of pruning after a glance at the trees, comparing the weevil-pruned with those that have escaped. I have only to regret that these insects do not visit every specimen on my grounds, for it is no easy task to get at the leading shoot of a Norway Spruce 30 or more feet high, and take it out with a knife or shears." When the trees are young, as those in nursery rows, the insect may do some damage.

Simple Plumbing for a Kitchen.

The engraving herewith illustrates a practical method of plumbing for country houses. It is quite free from complications, and the several parts may be obtained ready fitted, so that with pipe-tong and a screw-driver, any mechanic should be able to connect and set up the whole in working order. The cost is small. For the house on the next page it is estimated at $40; but may be considerably lessened. The annual interest and depreciation would not be over $5, while the saving of the house-keeper's strength would be many times that sum. *A* is a "ship pump," fastened to the kitchen floor, and afterwards enclosed by the wood-work fronting the space beneath the sink, so that when finished no part is in sight except the handle, which extends upward, and is worked with a lateral motion through a slot made in the drain-board. Other forms of force-pumps may be selected.—*B, B, B*, 1-inch supply pipes leading from a cistern to the pump, and thence ¾-inch pipe to the tank. *C* is a branch from the supply pipe leading to a point 10 inches above the sink, where a faucet is attached to regulate the flow of water as required. The tank, *D*, having capacity for 3 hogsheads of water, is placed in second story immediately above the pump. It is of plank, firmly made, and lined with sheet lead. *E*, iron sink, 16 by 24 inches. *F*, waste pipe (1½-inch with trap) leading from sink to a drain outside. A hogshead might take the place

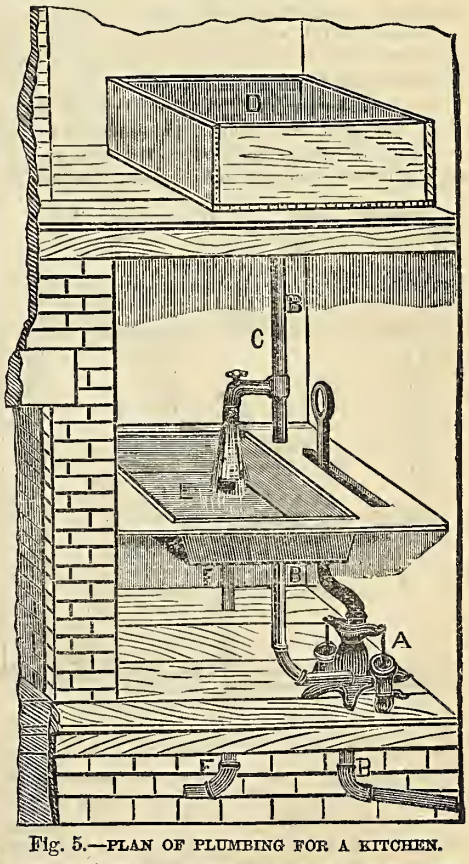


Fig. 5.—PLAN OF PLUMBING FOR A KITCHEN.

of the tank to save expenses, but is less desirable. The above very simple, easily constructed and inex-

pensive plumbing arrangement should be included in the fittings of every kitchen, as one of the most valuable and sure helps possible to obtain for its cost. A few moments spent in filling the tank as needed, by some hand employed on the place, will give abundant supply of water for all ordinary uses, and greatly lessen the labor of house-work. An opening may be made through the kitchen ceiling below the tank, which will allow sufficient heat to pass up to protect the tank water from freezing in severe weather.

Fig. 1.—FRONT ELEVATION OF HOUSE.

A Farm House Costing $1,200.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

This plan is partially based upon a sketch of a Wisconsin Farm House at which Mr. Judd stopped during his recent Western travels. It is suitable to most places in this latitude, and may properly front the north, east, south, or west. The interior is adapted to the wants of an average sized family. As is usual in this class of buildings, all halls, and expensive stairways are omitted, the entire space being devoted to the uses and convenience of the family....**Elevation** (fig. 1).—The general outlines and style are such as predominate on the buildings of thrifty farmers everywhere, and are suggestive of comfort and modest pretentions.

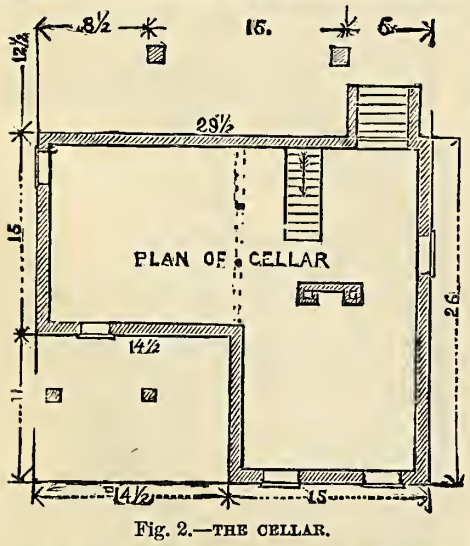


Fig. 2.—THE CELLAR.

The wood-work is set 2 feet above the grading, giving room for cellar windows and insuring dryness of the interior. A Veranda is always pleasant and useful to protect the front entrance from sun and rain. If desired, a vestibule can be had by enclosing the space as shown by dotted lines (fig. 3), and a door could open from it directly to the parlor. The details of exterior finish are very simple, and arranged for good proportion....**Cellar** (fig. 2).—Hight in clear, 6 feet 2 inches. It is lighted by five small windows, has an outside entrance from the rear, and stairs leading to the work-room of the first story....**First Story** (fig. 3).—Hight of ceilings, 9 feet. There are four good sized rooms, three closets, and the necessary stairways. The Parlor is square, has two front windows, and may have a side window at the right. It has an open fire-place and a mantel. The Kitchen is also square, has windows outlooking on three sides; an open fire-place suitable for a range; two closets, and a sink and pump. The Work-room communicates directly with the kitchen and with the cellar under the main stairway, and has an outside door opening to the rear stoop. Some use this room as a kitchen and the other as a dining and family room. In such case the sink and pump may be placed at *A*, and a stove at *B*, with smoke-pipe connecting with the chimney flue from the second floor. The Bed-room is convenient to either parlor or living-room, and has two windows and a closet. The Stairs, both up and down, are arranged to occupy little room, and have doors to each....**Second Story** (fig. 4).—Hight of ceilings in the main part 8 feet, in the side wing 3 to 6½ feet. They may be carried higher if desired at small additional expense. There are two chambers, two closets, and a passage in the main part; two bed-rooms in the side wing, and a garret in the rear wing, all opening from the stair landing. The Chambers have side walls full hight to the ceiling, the Bed-rooms are "half-story" finished. The Garret is floored, and has a small window in the rear, but is otherwise unfinished, being intended as a place for general storage.....**Construction.**—The excavations for the Cellar are 4 feet deep. The Foundation and Chimneys are of brick-work. Frame of sawed timber; Siding of "Novelty pattern," which is preferable, but may be of other form of boards. Principal roofs of shingles; Veranda and Porch Roofs of tin. Floors of 8-inch spruce, tongued-and-grooved. Windows in cellar have three-light sash hung with butts. Other windows have eight-light sash hung to weights. All doors are four-panneled. Casings for the first story are 5-inch moulded; for second story, 5-inch plain; Base to match casings. Plastering of both stories, two full coats and white finished. Painting, two coats of best materials. A pump, sink, and tank are provided, connected with suitable pipes, figure 5. (See article on the preceding page.)

In the following estimate many items may be reduced in some localities, as, for example, the foundations may be of stone, where easily obtained; and where lime and sand are cheap the plastering would be much less....**Estimate:**—

Cost of materials and labor:

57 yards excavation, at 25c. per yard	$ 14 25
12,000 Brick (furnished and laid), at $12 per M	144 00
30 feet stone steps, at 12c. per foot	3 60
475 yards Plastering, at 25c. per yard	118 75
2,800 feet Timber (as follows), at $15 per M	42 00
2 Sills 4x8 in., 26 ft. long. 5 Posts 4x7 in., 10 ft. long.	
6 Sills 4x8 in., 15 ft. long. 2 Posts 4x6 in., 13 ft. long.	
2 Sills 4x8 in., 13 ft. long. 2 Plates 4x6 in., 26 ft. long.	
2 Ties 4x6 in., 26 ft. long. 3 Plates 4x6 in., 15 ft. long.	
3 Ties 4x6 in., 15 ft. long. 2 Plates 4x6 in., 13 ft. long.	
1 Veranda 3x7 in., 56 ft. l'ng. 40 Beams 3x8 in., 15 ft. l'ng.	
14 Beams 3x7 in., 13 ft. l'ng.	
100 Joist, 3x4x13, at 15c. each	15 00
200 Wall Strips, 2x4x13, at 11c. each	22 00
230 Novelty Siding Boards, at 28c. each	64 40
Cornice materials	20 00
300 Shingling Lath, at 6c. each	18 00
35 bunches Shingles, at $1.25 per bunch	43 75
150 Flooring Plank, at 28c. each	42 00
2 Stairs (complete)	15 00
5 Cellar Windows (complete), at $3 each	15 00
16 Main Windows (complete), at $7 each	112 00
19 Doors (complete), at $6 each	114 00
3 Mantels and Shelves (complete), at $2 each	6 00
5 Closet Shelving (complete), at $2 each	10 00
Verandah and Stoop (complete)	30 00
Pump, $10; Tank, $15; Pipes, $8; Sink, $2; Setting, $5	40 00
Carpenter's Labor not included above	150 00
Painting, $120; Carting, $15; Incidentals, $25.25	160 25
Total cost, complete	$1,200 00

Materials for Compost.

The compost heap is always a timely topic, and the heap itself should be kept going from the beginning to the end of the year. Only put the right materials into the mass and it will make money for us while we sleep. There is generally time for the gathering of these materials before the spring work is pressing. Acres of rich material lie in every forest, the decaying leaves and fallen branches of many generations, often within easy reach of the barn, or of the field that is to be cultivated the next season. This mass of leaves and leaf-mould is rich in potash and phosphates, and is just what long cultivated fields and gardens need to increase their fertility. With a little calculation, muck, peat, or headlands can always be made available for the compost heap. This bank will never fail to give dividends. Any decaying vegetable matter—old straw, bog hay, corn stalks, saw dust, chip manure—may safely be put into the compost heap. Any animal matter in sufficient quantity will start fermentation in the heap and add to its value. If other articles fail, fresh manure from the stable and yard or sty, is always available upon the farm for this purpose. On most farms there are other occasional resources in dead animals, that should not be overlooked. The market town and village should be made to contribute to the compost heap. Wood ashes are sometimes available, the factory has woollen wastes, the grocer spoiled fish and meats and old brine, the builder slacked lime, and even the gas company gas lime. Slaughter-house refuse is rich in blood and animal matter, which is very valuable. The team that carries a load to market, in the absence of a paying load home, should bring back something for the compost heap.

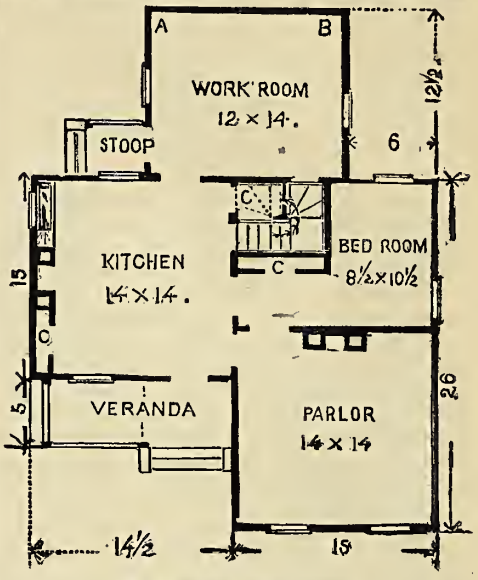


Fig. 3.—THE FIRST STORY.

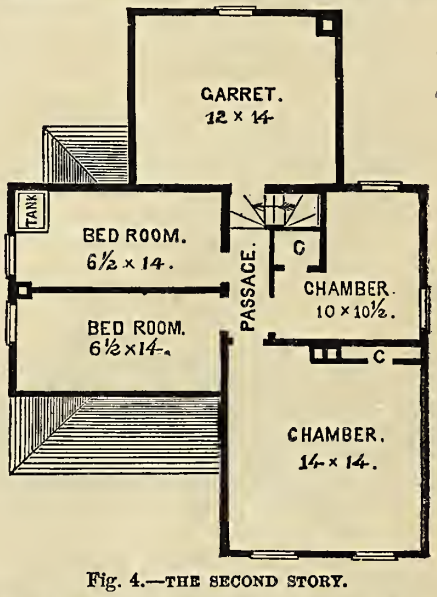


Fig. 4.—THE SECOND STORY.

Swiss Dairying.—The Simmenthal Cow.

Switzerland is essentially a dairy country. The grass grows greener upon the sides of the Swiss mountains, and in the elevated valleys than elsewhere, not excepting even the noted meadows and pastures of Ireland; the "Emerald isle," so-called from its luxuriant verdure. These verdant pastures have helped to produce some of the best Shorthorns, as those of Switzerland have produced the Swiss cows, probably the most prolific of milk and butter of any race of dairy animals. Pastures make cows; time and breeding of course being indispensable elements in the process, but no length of time or system of breeding can build up a race of excellent dairy cows without the feeding. The Swiss grass lands are favored with special advantages. The winter's frosts loosen from the granite rocks the most important elements of fertility, of which potash is the chief one, and the spring thaws and summer rains wash these down the hillsides and over the valleys and supply perennial sources of mineral food to the grass. Nowhere else is this natural process of fertilizing going on continually on a grander scale than in that country, where mountain side and sheltered valley alternate with surprising frequency. The rich verdure; the pure air and water; the freedom from restraint; the gentle and familiar tending; in short, the perfect adaptation of condition and circumstance to the development and comfort of the Swiss cow is such that it is noticed as a general thing that these animals, when taken from their homes, suffer from a sort of "home-sickness"; they lose their contented disposition, they seem to fret, and rarely fail to depreciate in excellence during their enforced banishment. It is only when their progeny become acclimated and used to the new circumstances, that the race recovers its historic value and meets the expectations of its new owners. This fact, which is too frequently observed to be doubted, has led to the opinion among Swiss dairymen that the exportation of their cattle should not be encouraged, and among the French dairymen that importations of these mountain cattle do not turn out so satisfactory at first as might be expected. It may be that a sort of sentimental patriotic feeling so general among the Swiss, may have given birth to this idea of "home-sickness," when in reality it is not so much in the sensitiveness of the *morale* of the cow as in her digestive organs, not so richly supplied, that her failure has its origin. Perhaps, too, the inventive minds of the Swiss people, to which the far-famed legend of William Tell, with all its amplifications, is due, in their absorbing love of their own land, may have imagined that their cows can as hardly leave their pastures and herders, as they themselves could leave their homes; and only with equally regretful memories. But, however, the fact remains, that pastures and cows being perfectly adapted to each other, the Swiss cows in their native homes are perfect dairy animals. And this is true with all the varieties of this race, of which there are several. The *Simmenthal*, the subject of the portraits here given, is to other Swiss cows, what the Jersey is among our dairy cows. An average product of a Swiss cow is 2,700 quarts in the year, a comparatively low yield, but the milk is exceptionally rich in cream. The best cows give 28 to 32 quarts per day when fresh, and an average of 18 quarts through the pasturing season, is far from rare. The Simmenthal cow, as seen by the portrait given, is essentially a dairy cow. The gentle expression and the quiet attitude produce a favorable impression at first sight. Having an excellent reputation, it is frequently the case, that other cows of mixed breed, similar in color, are passed off as of this variety, and this may be taken as one proof of its excellence. The color of this breed is red, pale-red, or red and white; the whole appearance is pleasing, and the figure of the bull is that of a true dairy animal. The breed possesses large milking capacity, and cows that produce 34 quarts daily of very rich milk, are said to be by no means unusual. But it is a common failing for the breeders of a race of cows, to strain a point in favor of their own kind of stock, and it is remarked by a well known Swiss writer, that as the question of profit is closely connected with the reputation of a race of cattle, attempts are sometimes made to obtain a high character for one breed, at the expense of others, with a view to attract purchasers; a remark which may be justly applicable to others than these simple mountaineers. The same writer also hints strongly of "intestine quarrels;" "interested eulogies;" and "accusing controversies;" all of which might well be supposed to apply to other advocates of different kinds of dairy cattle than the Swiss, who are as yet unable to agree among themselves, as to which of their various breeds produces the best dairy cows. Our American breeders find themselves in a similar predicament. The Swiss cows, more especially the variety known as the Simmenthal, have been fed and bred for the production of rich milk. It is an accepted belief among Swiss breeders, and dairymen, that feed is a very important element in the production of butter. The faculty of converting certain elementary substance into butter is organic, depending on the structure, and constitutional functions of the cow, and being independent, up to a certain point, of the nutriment. Of two cows fed alike, one may give richer milk than the other. It is curious that this evident, and practically known fact, should be disputed by some persons, (not Swiss), who are taken to be experts on dairy matters. But facts show it to be true in spite of theories and opinions; and our readers, who guide themselves by any other principle than this, will surely discover that they are misled. Swiss cows, by reason of their excellence, have been largely exported. The spread of the manufacture of Gruyère cheese—for which rich milk is necessary—into those districts of France and Germany, which border on Switzerland, has made it necessary to import with the industry, the means to make it successful, and where this cheese is made, the Swiss cows, and Swiss dairymen, have been introduced. The race has taken a permanent foothold in America, and several herds of the most excellent quality are now in course of formation in parts of New England. For the photographs, from which the accompanying portraits are reproduced, we are indebted to one of our Swiss subscribers, Mr. Im Obersteg, of Oberwyl. The cattle were bred by Mr. Rebman, in Erlenbach. The bull is 3 years, the cow 5 years old. Both were sold to a Russian.

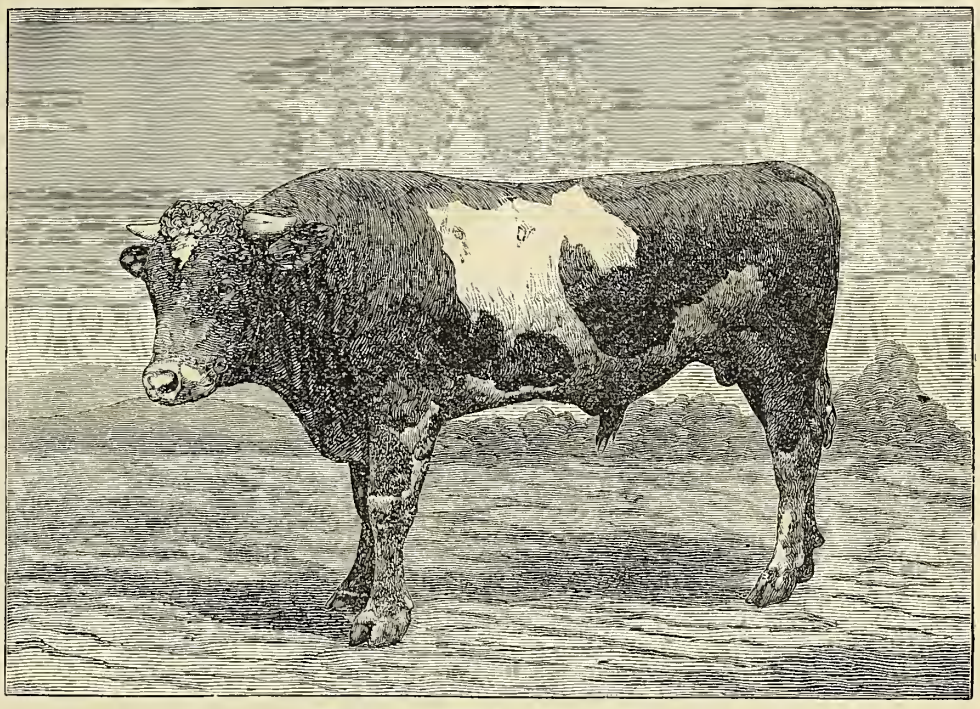


Fig. 1.—A SIMMENTHAL (SWISS) BULL.

Fig. 2.—A SIMMENTHAL (SWISS) COW.

Smoothing Drags and Pulverizers.

The success of any crop depends greatly upon the proper preparation of the soil, which should be made fine and mellow, but yet compact and firm about the seed. It is better to spend two days work than one in preparatory fitting of the soil for a crop, because the extra labor will be liberally repaid by the better growth, from the first sprouting of the seed and the lighter labor of cultivating afterwards. We have recently examined an excellent implement for this work, the "Acme Pulverizing Harrow, Clod Crusher and Leveler." This consists of an adjustable bar in the front (see fig 1), which is moved by the lever so as to ride over the clods in

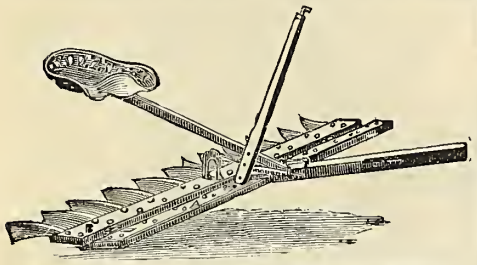


Fig. 1.—THE ACME PULVERIZER AND LEVELER.

rough ground and crush and break them by means of a number of teeth fitted into it. Behind this is a second bar furnished with steel blades, which cut the soil, pulverize it, and turn it in small furrows, leaving it in the best possible condition, covering weeds or sod perfectly. We find this machine to be adapted for other uses than are claimed for it by the makers. There is no better implement for covering seed, especially peas, which are difficult to cover by the common harrow; and the ground is left in the best condition for sowing grass or clover seed, after the seed grain is covered. By adding markers behind it it may be made very effective in marking out rows for planting corn, or drills for sowing beets. A coverer for grass seed sown after this implement is shown at figure 2. This may also be used for packing the soil in place of a roller, and on light soils will be found far more useful than that

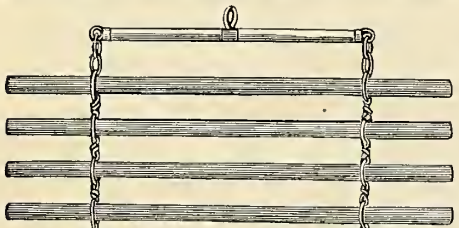


Fig. 2.—COVERER FOR GRASS SEED.

implement. It consists of a number of rails or poles fastened together by means of two light chains. If desirable, markers may be attached to this implement in a manner shown in the above engraving.

Milk—What is It?—The natural food for the young of all mammals is milk—a rather complex fluid, the physical properties of which it is not necessary to describe.—The principal constituents are water, sugar, caseine, albumin, fat, and several salts. The sugar, when separated, looks much like the ordinary kind from the cane, but is much less sweet. Caseine is one of the leading constituents, and is the part which, when removed from the milk, becomes the cheese. The caseine exists in small particles in the milk, and is contracted or gathered into large masses by the action of acids or rennet. The albumin remains in solution after the caseine is removed, and is separated by boiling, when it appears as white curds, somewhat resembling the white of eggs in appearance, as it does also in composition. The fat is not dissolved in the milk, but suspended as little globules with thin coverings. In the process of churning, these globules are broken, and the fat collects in lumps of various sizes. This fat, when worked, salted, etc., is the butter of the market and table. The ash is but a small part of the milk, and consists of a number of substances, which are left behind when the milk is dried down and burned. There are many things to influence the percentage of these various ingredients of milk. It is far from the same in different species, and among cows, the breed, feed, general treatment, age of animals, etc., all have a modifying influence.

Ventilation of Barns and Stables.

The moist air of barns, and the foul air of stables, should be carried off in the most direct manner. Ventilation depends upon the fact that warm air rises and will escape from the upper part of a building, if cold air is admitted at the lower part. But if no openings are made below, the air remains stagnant, and cannot escape at the upper openings. In all arrangements for ventilation, these requirements must be met, and a neglect of them has often prevented the successful operation of costly, but faulty methods. In barns, a want of adequate ventilation encourages mildew, sweating and moulding of the contents, and in some cases over-heating, and spontaneous combustion of hay that has been stored in too moist a condition. The usual method of ventilating barns by means of one central cupola, or by a window in one or both gables, is dangerous, because it confines the escaping air, which is always charged with moisture in the summer time, to one considerable stream, and moist air, being an excellent conductor of electricity, serves to make the most danger-

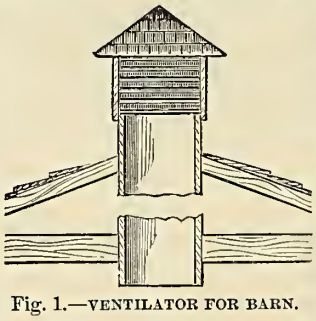


Fig. 1.—VENTILATOR FOR BARN.

ous lightning-rod—so to speak—to bring the lightning into the barn, and so set it on fire. This explains the cause of the frequent destruction of barns by lightning, during the season of harvest or soon after. It is wise, therefore, to break up the stream of air which escapes, both by having several ventilators, and to arrange these with slatted work on each side, to conduct the escaping air in downward or horizontal currents, which will spread laterally in a sheet rather than pass upward in a column. A useful ventilator for a barn is shown at figure 1. This is a tube of sufficient capacity, which starts at the ceiling or floor of the lower story, and passes through the upper one. If the upper part passes through hay or grain mows, it will be advisable to make several openings in the tube at that portion, that it may carry off any heat or moisture, which may exist in the hay or straw, soon after it is

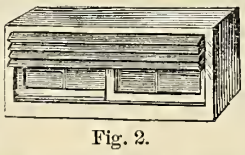


Fig. 2.

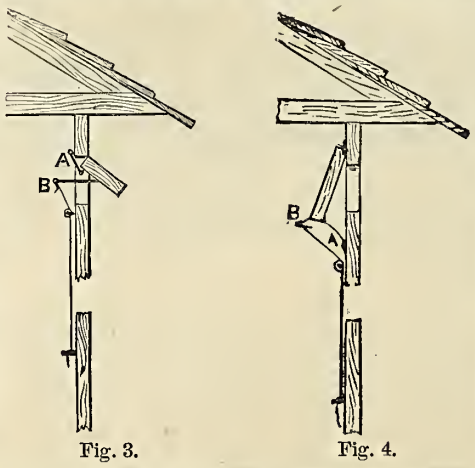
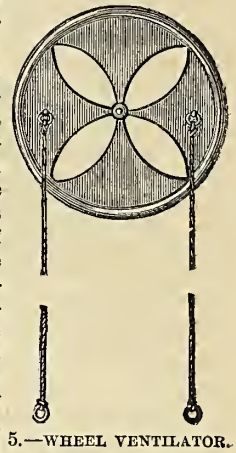


Fig. 3. Fig. 4.

put away in the barn. Where this form of ventilator is not suitable, others may be provided in the eaves; one shown at figure 2, consists of a wooden frame, set in the wall near the ceiling or floor, in the manner of a window frame; the upper half of this frame is furnished with blind slats, so placed, as to facilitate an upward and outward current, the lower half has two sliding windows, or panels, which admit fresh air, while the foul hot air flows outward. This fresh, cool air drops down to the floor and makes a circuit, forcing out the foul air, and purifying the whole building. This arrangement has the advantage of distributing the fresh air, and more effectively, if the panels are fitted with slats set on end, and each half reversed, so as to force the air in different directions. Another ventilator, figure 3, set in the eaves of a stable, consists of a falling door, so hinged, that it closes of its own weight, and is opened by a cord arranged as shown in the engraving. The same kind of a side ventilator door may be held open by a piece of wire spring, figure 4, *A*, and closed by a cord, fastened at *B*. Another ventilator may be made by sawing out holes in the board, and pivoting on a cover with similar openings; this cover being moved by cords, to open or close the spaces. This ventilator, shown in figure 5, is one easily made and operated. The matter of thorough ventilation of barns and stables can not be too strongly insisted upon, as it determines in great measure the health and therefore the value of the stock contained in them. Pure air is as essential as pure food, and can only be secured to confined animals by a proper circulation through ventilators.



5.—WHEEL VENTILATOR.

Among the Farmers.—No. 50.

BY ONE OF THEM.

One of my good neighbors met me at the store with a new pair of sheep shears. "Well," said I, "isn't that rather forcing the season, you don't shear sheep in January, do you?"—"No," said he, "but we use the shears to clip the horses' fetlocks. They are getting long now, and hard to keep clean. I always clip them about the time they are fully grown out. The horses look much neater for it."

Grease ("*Scratches*") in Horses.

My friend's stable contains some ten or twelve work and road horses and colts, several of them of great excellence, and he has been almost every season more or less troubled with *grease*, or "scratches," as it is vulgarly called. No horses could have more attentive and careful grooming than his, and why he should have Grease in his stable I have, until now, been utterly at a loss to surmise.

Many years ago I read that the fetlocks constituted a protection to the skin on the pastern and above the heels, where it is especially sensitive, and as I had found that on horses deprived of this protection, that they might be more easily cleaned and kept clean in muddy weather, those parts often became red and irritated, if not drusy, I stopped the practice at once, and we have never since had chapped heels, or any trouble approaching Grease in our stable. Besides, I have taken some pains to inquire and observe, and have not yet found "scratches" origiuating in a stable where the fetlocks were left on, and where when the horses came in wet and muddy were simply rubbed off with a wisp or two of straw, and thoroughly cleaned with a good brush when dry.

Prevention is better than cure—and I think the sweeping assertions of the books that the disease is found only in neglected stables, and is always a disgrace, notoriously erroneous. Wrong care can just as well produce it as neglect.

Road Taxes

are certainly a great burden in this country, consid-

ering how poor our roads are. We have town or district meetings, and vote money enough to keep the roads as they are—simply not dangerous—for a year—and we do well if some opposer of taxation does not lead off an opposition to any appropriation—and so we are content to take half or a third of the sum at first deemed desirable and necessary. We plunge through sloughs in winter, and rack our wagons in ruts, or creak through sand, and see no remedy. Year after year we are taxed, and though there are a few more roads, they are no better than they were a hundred years ago.

How Is It in the Old Countries?

They have been steadily improving. The possession of good roads is something rather recent over the greater part of Europe. It has come, for the most part, within 150 years; and that is since many of our roads were laid out in the Eastern States.

We have here no distinct classification of roads. A public road is distinguished from a private road, and from a right of way, but so far as custom goes there are no other distinctions except when turnpikes or plank roads are chartered. It would aid greatly if the State Legislatures would classify roads and establish certain as first class, and require that the townships through which they pass should keep them in such good order that the heaviest loaded wagons, or even artillery trains, would nowhere sink an inch deep in the mud. Roads once put in such order would require but a small annual outlay to keep them so, and the State ought to pay half the cost of making them at the outset. There is another class of thoroughfares which the county ought to aid the township in making, and which might differ from the first class roads only in the steeper grades and narrower road-bed. Highways of the third class should be just as good as the township could afford to make and keep in order.

Take the country around New York and the neighboring cities as a sample of the rest of the country, and it is clear that the market gardeners of the immediate vicinity have great advantages over those at the distance of ten miles, which would be of little moment if they had good roads over which at all seasons, and especially in the spring, they could trundle their heavy loads to market.

A few years ago farm products, potatoes, cabbages, squashes, apples, and garden vegetables, in their season, used to be transported from a large section of country about here in boats, or in wagons upon the boats to New York. Then the railroads were built, and this class of merchandise was more rapidly and easily sent to town by rail. Now these same railroads bring this very class of goods from the western part of the State of New York, from Pennsylvania and Ohio, just about as cheaply as they will take our truck only 15 or 20 miles. It is therefore very important for the farmers and gardeners to have such roads to the neighboring cities as will make them independent of the undiscriminating rates of the railroads. There are thousands of acres of warm light land, well watered, early and easily worked, which, being within some 16 to 18 miles of the densest population of New York, might and would be used for raising vegetables if we only had better roads. This system of

Farmers Marketing their Own Produce

ought to be encouraged in every way by municipal authorities. The action of the New York authorities has been the reverse of encouraging to this kind of traffic. Whereas in Philadelphia, and many other cities, the people, or all who wished to do so, could buy every thing which the farmers and gardeners had to sell of the producers themselves, in New York, but little of that kind of trading could be done—and this little is beset with inconveniences—so that but few things could be sold in this way, potatoes, turnips, cabbages and green corn, tomatoes, carrots, peas and string beans, spinach and pot-herbs, with celery and horse-radish making up the list. Country-dressed meats, sausages, headcheese, poultry, eggs, butter and pot-cheese, with the firmer fruits in their seasons, are rarely or never sold in New York by the producers. The result is bad both for the citizens who buy and for the neighboring country folk who are the producers.

Draining at Houghton Farm.

Visiting Houghton Farm a few weeks after Dr. M. Miles had arrived and fairly settled down to work, I was delighted to find that the excellent system of laying tile drains, which he had inaugurated in Michigan, was here introduced and in full operation, with such improvements as his ever ripening experience would suggest. There are two ideas which may take possession of those who undertake land drainage. One is that stones, brush, poles, boards, etc., which are sometimes used as substitutes for tiles, are really cheaper than tiles, and are even tolerably effective, and to be trusted for a considerable length of time. The other is that, aside from the proper surveyor's work, which is indeed very simple, there is great difficulty in getting the drains well leveled, and the tiles laid and covered without displacement. Any one who could have watched the operations of the ditch diggers, and tile-layers, as I saw them at work would I think be disabused of both of these ideas. The land where the men were at work was so nearly level that the fall appeared to be quite in the opposite direction to that which it really took. It is generally easy enough to lay the drains in land which has a considerable slope, but difficulties are encountered when there is but very slight fall. The drains in this case were staked out in eight-rod lengths or thereabouts, and dug out pretty nearly to the required depth, which was 3½ to 4 feet, according to the undulations of the surface. Then, instead of using "boning rods" to determine the grade of the bottom of the ditch, a cord was stretched above the centre of the ditch, just high enough to clear the heads of the workmen. It was supported on "shears" (fig. 1) at each end, made by bolting together, five or six inches from their ends, two strips of wood like fence pickets, but of pine or some light wood. These strips are 6 feet long, and about 2½ to 3 inches wide, of ⅞ or 1 inch stuff. The ends are left square. A stout, light line, like a carpenter's chalk line, is stretched between these shears, which are placed straddle of ditch, one at each end of an eight rod length. To hold the shears firmly in place, the line is given one turn around one of the upper ends, and is then made fast to a stake driven into the ground ten or twelve feet away. It is important that the line should be taut, hence it must be light and strong. There will be a little sag in it, of course. This is practically taken out of it by means of "rests" placed at two or three points along the line. One of the rests is shown in fig. 2. A fork or rake handle, shod with a point of iron and capped with a short piece of gas pipe, having a movable arm 2 feet long, standing at right angles to it, and held in position by a wedge, completes the simple and efficient instrument. This is driven firmly into the ground near the ditch, and the end of the arm placed under the cord and raised just so as to take the sag out. In this case the line was set just 7 feet above the ditch bottom where the tiles were to rest, which placed it clear of the heads of the workmen. It is obvious that the adjustment of the line is exceedingly easy, as by spreading the legs of the shears it would be lowered, and by drawing them together it would be raised. Figure 3 shows the line above the ditch, supported by a single rest.

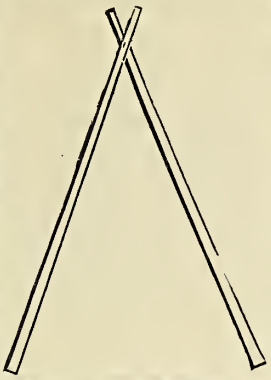


Fig. 1.—THE "SHEARS."

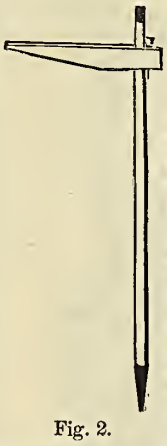


Fig. 2.

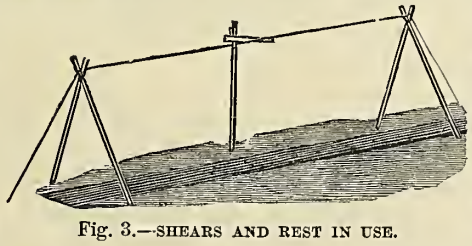


Fig. 3.—SHEARS AND REST IN USE.

Two men were at work finishing a ditch and laying the tiles. One had a seven-foot rod, which was kept close by, and every now and then he tested his work and that of his companion by setting it on the bottom of the ditch and moving it under the line in a small arc. As the "finishing" of the ditch proceeded the tiles were laid. They were using inch and a half tiles with collars. The seven-foot gauge stick was notched to indicate the hight of the tiles, and again to show the hight of the top of the collars, so that placing the gauge stick in the ditch it would just clear the cord; placed upon the tile the line would lie in one notch, and placed upon the collar it would lie in the other.

This whole arrangement enabled the men to work with extraordinary rapidity. If moderately intelligent and trusty, they can be left quite to themselves, and will do accurate and good work. Two men had, within two hours and a half, cleaned out four to six inches of the bottom of a ditch, and "finished" a bed for the tile, laid and covered them 8 inches deep, in one of the eight-rod lengths to within twenty feet more or less of the end. There

Fig. 4.—THE PUSHING SCOOP.

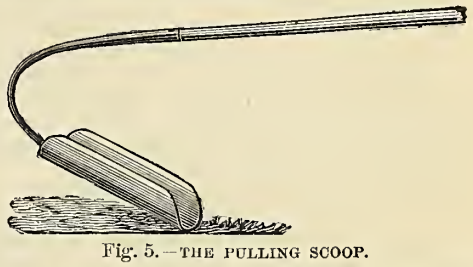


Fig. 5.—THE PULLING SCOOP.

were a good many stones in the bottom, too, which made "finishing" rather tedious. They had

Good Tools,

in fact, the best draining tools I ever saw.—The spades do not differ essentially from the common English draining spades, but are lighter and with D-handles. Two sizes only are used for digging, for 2, 3, 4, and 5-inch tiles. The blades are 17 inches long, the handles 28.

For finishing the ditches tools termed "finishing scoops" are generally used. These are both for pulling or pushing, figs. 4 and 5, and the blades are set upon long handles, by means of goose-necked sockets, by which the requisite angle is given to the scoop. The "Houghton Farm Scoop," figure 6, as I should call it, is similar to the others in the form of the blade, but the attachment to the handle is made at the middle of the scoop. (See illustration.) Thus the pull and push scoops are combined in one, a much stronger, lighter, and more efficient implement. The attachment being much stiffer, and the leverage between heel and point so much less, the angle at which the scoop is set is not nearly so likely to be changed by

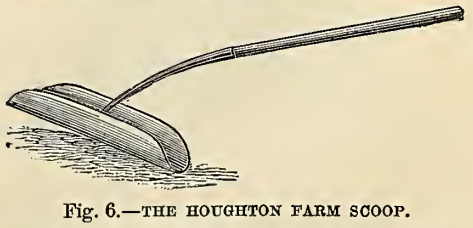


Fig. 6.—THE HOUGHTON FARM SCOOP.

any accidental strain or bending, which makes a great difference in the ease and rapidity with which work is done. I noticed scoops in use which had been altered from the common ones, by placing the

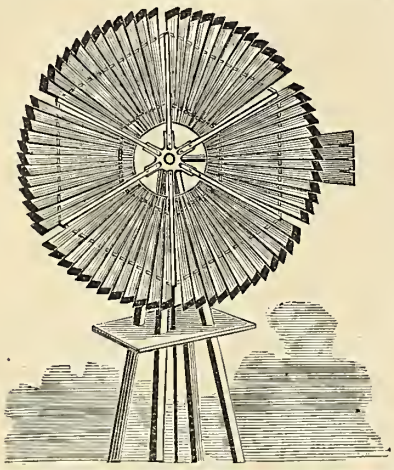


Fig. 1.—THE ECLIPSE WINDMILL AT WORK.

handle attachment in the middle, and others which were made of old saw-blades bent into the suitable form, and handled as described. The blade is preferably about 13 inches long, and the length of the handle, for all ordinary uses, only five feet instead of seven or eight, as they are commonly made.

There were some 20 men, I suppose, at work at this job of draining, and I certainly never saw such work go on more smoothly and rapidly, and at the same time so thoroughly well. It seems quite worth while to present the matter with some detail to the readers of the *American Agriculturist*. In ordinary underdraining, as done with boning rods on the usual plan, it is rare that the levelling is so accurate that there will not be a variation of more than half the diameter of tile, producing tendencies to fill up with silt, and frequently stoppages, after the drains have been in use only a few months.

When laid on Doct. Miles' plan, the superintendent has only to see that the lines are at the proper hight, and well stretched, then the workmen will do all the rest, with hardly a chance of an error in the level or fall of more than the thickness of the wall of the tile itself, if even so much.

This is only one subject of many, with which I came away from Houghton Farm, well charged, and feeling as if I could say a considerable that would be of advantage to many of my fellow farmers.

Improvement in Wind Engines.

The power of the wind is much greater than is generally suspected. If the air were visible it would be seen in motion very much like water, the current smoothly flowing when no obstructions interfered, but whirling, eddying, and irregular in its force, as obstacles to a free movement deflect

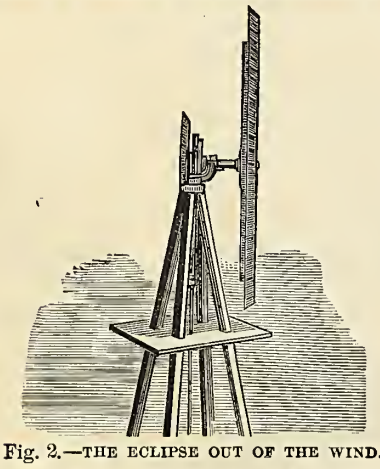


Fig. 2.—THE ECLIPSE OUT OF THE WIND.

the current into many directions. In making use of the wind as the cheapest available mechanical force the peculiarities of its motion must be taken into account. Air possesses weight, and in moving against a fixed object its momentum exerts a force just as much as if it was a solid body that moved. The force exerted by the wind upon any stationary object is found by multiplying the square feet of surface opposed to the wind by the number of feet through which the wind moves in a second multiplied by itself, or squared and divided by .002288 or $^{2288}/_{1000000}$; thus one of the 10-foot wind engines having 68 square feet of surface, in a wind moving 30 feet per second, or about 20 miles in an hour, which is what may be called a pleasant, brisk breeze, will receive a propelling force of 136 pounds, or more than equal to the amount of tractive force exerted by a horse moving at the rate of 3 miles in an hour. It is evident that the full utilization of this power of the wind depends very much upon the excellence of the machinery to which it is harnessed to do our work, so to speak; the more effective this may be, the greater amount of the

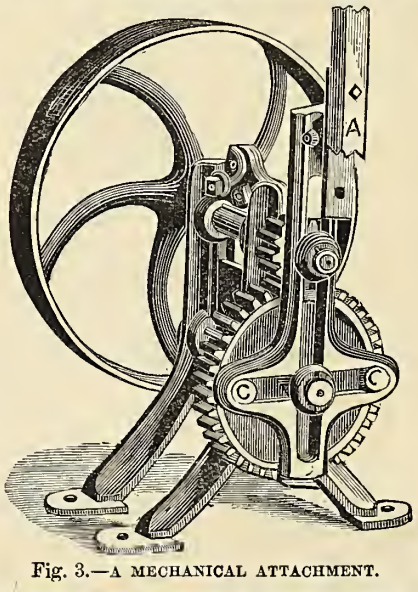


Fig. 3.—A MECHANICAL ATTACHMENT.

force of the wind is turned to useful account. It is quite as important to investigate this point in choosing a wind-engine as it is in selecting a water-wheel. In calling attention to several excellent wind-engines we merely remark that for most of the work of the farm, dairy, and household, and for many mechanical works, a wind-engine is the most useful, economical, simple, and safe power that can be employed. With proper self-regulating devices it will work steadily night and day, without feeding, without watching or other attention, needing only occasional oiling, to work on, while the owner sleeps, eats, or labors elsewhere. The engine is able to regulate itself, instinctively, as it were, to all the changes of the wind; turning out of the wind and stopping when it blows with excessive force, and turning in again and resuming work when the gale modcrates. No other mechanical power can thus be left to regulate itself, except perhaps a water-wheel, and even this, in floods—which may be parallel in their effects to a gale—suspends its working. The Eclipse Windmill, made at Beloit, Wis., is the first that occurs to us. This made a wide reputation at the Centennial as the only mill there that was not damaged by the great storm of June 27th of that year. It is shown at work in figure 1, and out of the wind at figure 2. A side vane (shown at fig. 1) receives the force of a storm and turns the mill edgewise to the wind. When the force abates a weighted arm brings the front to the wind again. A remarkable mechanical device, shown at figure 3, is attached to this mill. It is one that changes an up and down movement to a rotary one. As the rod, *A*, moves up and down, the buttons, *C*, press on the inner rim of the gear wheel and carry it round, one button working on the up stroke and the other on the down stroke, so that the wheel turns regularly and continuously.

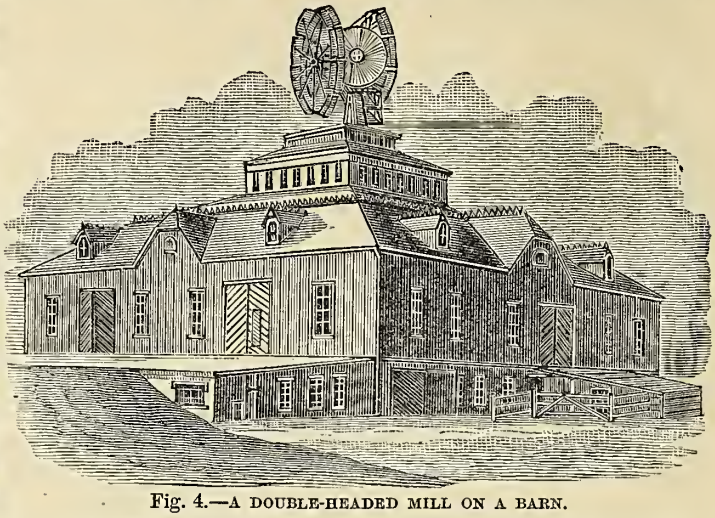


Fig. 4.—A DOUBLE-HEADED MILL ON A BARN.

It is claimed that 120 revolutions per minute may be made in a 12-mile (an hour) wind. This enables the mill to churn, saw wood, run a lathe, cut and grind feed, etc., as easily as to pump water. The Challenge Windmill, made at Batavia, Ill., is a popular mill, and is both single and double. A double-headed mill, erected on the barn of the well known breeder of Hereford cattle, T. L. Miller, of Beecher, Ill., is shown in figure 4. This is a 30-foot mill, and cuts hay, shells and grinds corn, and pumps water for 300 cattle, 200 sheep, and 200 hogs; besides doing the grinding for the neighbors. The fine barn here shown is worthy of notice.

Figure 5 is the Myers' Windmill, a rosette wheel with rudder, made at Salem, Ohio. The self-regulating device of this wheel is peculiar. The vane is parallel with the wheel, and lies flat when the mill is in gear. When the force of the wind overbalances the weight, this throws up the vane, and the wind striking it, turns the wheel out of gear. When the wind abates, the vane is turned, and the wheel is brought into work again, as seen in the engraving.

At figure 6 is shown the Perkins' Mill, made at Mishawaka, Ind. This mill has been made since 1869, and is of the solid or rosette form; it is also a self-governor. Another solid or "rosette" mill is the "I. X. L.," made at Kalamazoo, Mich. (fig. 7). This is a self-governor, the wheel and rudder folding together in a wind too heavy to be safe. It is able to turn partly out of the wind and still run when the blow is not too heavy. Figure 8 is the Victor Mill, made at New London, Ohio, which is moved by broad sails, so fitted as to turn on pivots and regulate and equalize the motion as the wind

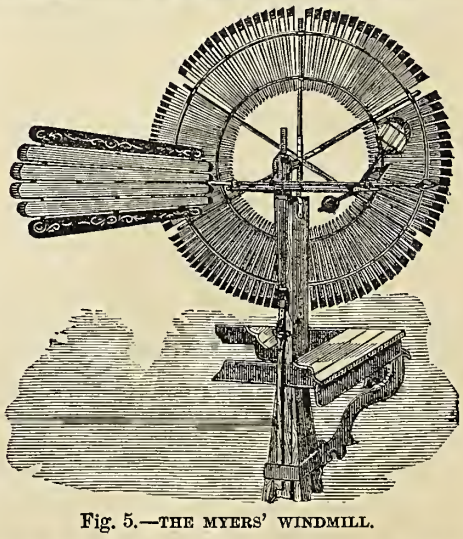


Fig. 5.—THE MYERS' WINDMILL.

may change. The regulating apparatus consists of the balls or weights seen in the engraving, which govern the position of the sails according to their velocity. The Stover Wind Engine, figure 9, made at Freeport, Ill., is a "rosette" mill with but three

joints and self-regulating, so that in a gale it turns itself edgewise to the wind and stops. A peculiar feed grinder, described in the *Am. Agriculturist* for Aug., 1879, is used with this mill. Its peculiarity is its light running power, being moved by very

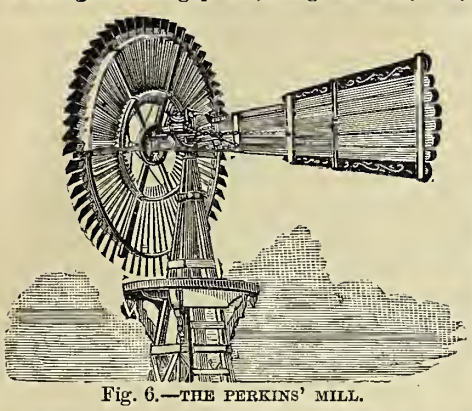


Fig. 6.—THE PERKINS' MILL.

gentle winds. The Triumph Engine (fig. 10), made at Racine, Wis., is a recent invention, and has no vane; this regulates itself in a high wind by means of a governing weight, which folds the wheel and turns the edges of the sections to the wind when the velocity becomes too great to run in safety.

Each of the above mentioned engines is made by respectable and responsible manufacturers. Each one has special points of its own, which are described at length in the manufacturers pamphlets and circulars, and those who need such machines can use their own judgment as to which might suit their fancy or meet their necessities. For addresses of manufacturers, see business columns.

Influence of Parent Upon Offspring.

Many and different views have been held upon the relative influence of parents upon their offspring; but in modern times, the discussions of this question date from the publication of a number of prize essays, written on the following subject: "Whether the breeds of live-stock connected with agriculture, be susceptible of the greatest improvement from the qualities conspicuous in the male, or from those conspicuous in the female parent." This was in 1825, and the prizes were given by the Highland Agri'l Society of Scotland; the essays, wholly, or in part, appearing in the Transactions of this old Society. The claims of one of these writers, can be briefly stated in his own words. "Any hypothesis which would assign a superiority, or set limits to the influence of either sex in the product of generation, is unsound, and inadmissible." This assertion seems bold, but we will see that even with 55 of the best years of thought and investigation in this direction, the essayist was not far from the truth as the matter stands to-day. Another writer asserts that the greatest modifying influence is possessed by the male, and gives a number of cases to prove his point. These instances cited by the essayist, admit of a different interpretation. Dr. Miles, in his "Stock Breeding," says on this point, "the males used being more highly bred

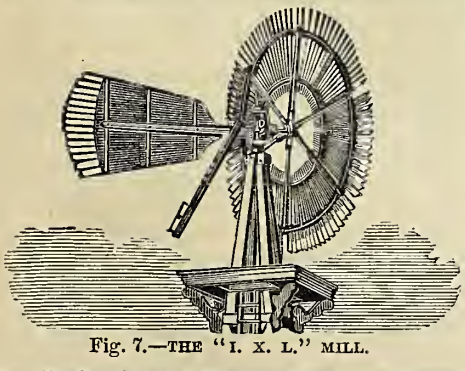


Fig. 7.—THE "I. X. L." MILL.

than the females, and therefore likely to be prepotent in the transmission of their qualities, his conclusions as to the superior influence of the male, are not sustained by the evidence presented." There is an important thought in this quotation. The "more highly bred," that is, the longer animals of like or similar characters are bred together, the stronger becomes the power of stamping those characters upon the offspring. When an animal thus bred, is crossed with one without any strong common characters in its ancestry, the former has the greater influence—the controlling power over the offspring. So far as known, this principle holds equally good with females as males, but as, in general practice, a blooded male is crossed with grade or "native" females, and the result is an animal more after the sire than the dam, it is quite natural that the conclusion of the writer might be obtained. The reason why, in the majority of cases, the males will be the higher bred, goes without saying, the whole question resting on the fact, that a male can serve a number of females. Through the purity of the blood of the males, must the mass of domestic animals be raised to a higher standard, and it is the work of the pure-blooded female, to produce these males to go out and infuse this higher blood; to impress good, strong characters, on the otherwise comparatively plastic natures of the low-bred stock, or in other words, those that have not been *bred* at all.

We must not confound strength of character, as we have been using the term character, with the vigor and strength of the animal. A male of high constitutional development, full of animal life, may be very weak as regards its power to impress itself upon the offspring, and *vice versa*. Aside from breeding, or the lack of it, there are other, though secondary conditions, which determine in some measure, the animal's prepotency. Thus, the age has an influence. Animals either immature, or in old age, do not, in general, control the offspring to the degree that is observed when in the full strength of middle life. Again, the powers may be lessened by over use, to be regained after a period of repose. It is hardly necessary to mention that in some of these secondary modifying conditions the sexes do not share equally, as is especially the case in the one last mentioned. Another of the Highland

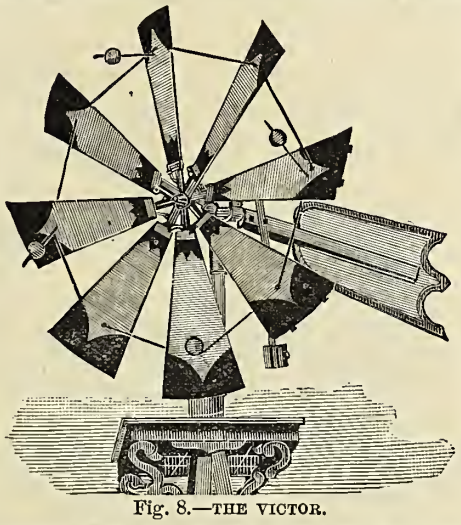


Fig. 8.—THE VICTOR.

essayists dwelt upon the theory that the male controlled the *external*, and the female the *internal* qualities of the animal. This ingenious idea has been the one most discussed in later times; but being based on pure assumption to start with, and not upheld by subsequent physiological, or rather embryological, study, it, like many others, has the Scotch verdict upon it; "Not Proven." Dr. Miles, whose work, above mentioned, contains all the most recent information on this question, says: "Instead of a limitation of the influence of each parent to a particular set of organs, we find the parent that is prepotent in the transmission of its characters, has a controlling influence upon the internal as well as the external organization of the offspring." Whatever the whole truth of the subject may be, at present it must be admitted that there is only one known law bearing upon it, and that is, "Like produces like;" the action of which results in fixity of character, and therefore controlling power.

Yeast as an Insect Destroyer.—In a recent paper on "Destruction of Obnoxious Insects by Application of the Yeast Fungus," Dr. Hagen, Professor of Entomology in Harvard University, states some facts and experiments, and suggests a probable remedy for the injuries caused by insects. The statements of Doct. H. are of so much interest to the agricultural world, that we make an abstract of them. It is a well known fact,

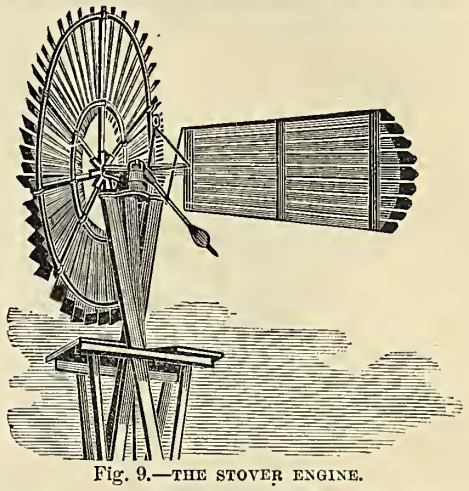


Fig. 9.—THE STOVER ENGINE.

—and one that especially troubles house-keepers late in the fall—that the common house-fly dies of a fungus, a white mould, which after death often holds the insect to the ceiling, window, etc. This fact suggested that other insects might be killed by inducing a fungus, or mould, growth within them. Yeast is a fungus, very common, easily provided, rapid in its growth, and the one it would seem of all others to be used for such a purpose. The mode of application is to sprinkle the obnoxious insects and their food with diluted yeast. This is the theory; but is it a practical one? All questions like this must be settled by thorough experiments, and, as far as the present goes, only a few trials have been made. Dr. Hagan states that four experiments are on record, three without success, but the results of the fourth are more favorable. In this case Potato Beetles were selected as the subjects, and after being divided into two parcels, one of the groups was sprinkled with a yeast solution on three or four successive days—the eighth day the sprinkled parcel of bugs began to die. All were dead thirteen days after the first sprinkling. Of the other parcel, only three had died, and all the rest were alive and well a month later. There were about 50 in each parcel. Upon examination with the microscope the fungus was found in abundance throughout the interior of the yeast-fed Beetles. The author of the paper arrives at the following conclusion: "That the application of yeast on insects produces in them a fungus which becomes fatal to the insects." It is evident that a large number of, and more extended, experiments are demanded before the practical value of this method of extermination of injurious insects is known. "The sprinkling of potato plants infested with the Potato Beetle and by their larvæ is easy, certainly as easy as the use of Paris Green, but less costly.... The application on greenhouse pests is so easy that

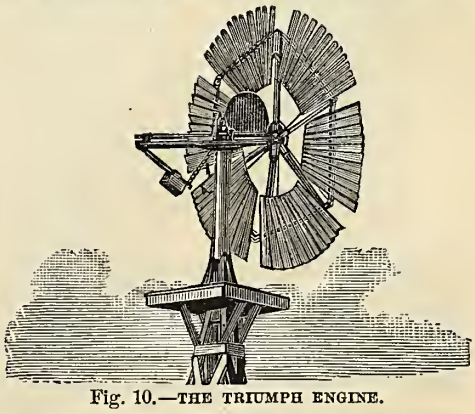


Fig. 10.—THE TRIUMPH ENGINE.

I hope the remedy will prove to be a great benefit to horticulturists." The remedy is so simple that it deserves at least a wide and general trial, which might result in showing this suggestion to be a great boon to farmers and cultivators everywhere.

Stiernward's Swedish Churn.

In describing, last month, the separation of cream by centrifugal force, it was mentioned that the invention was originally a Swedish one, though the American application of the principle was entirely original. Another Swedish dairy utensil may be worthy of note. This is a rotary churn which, although not entirely novel in construction, has

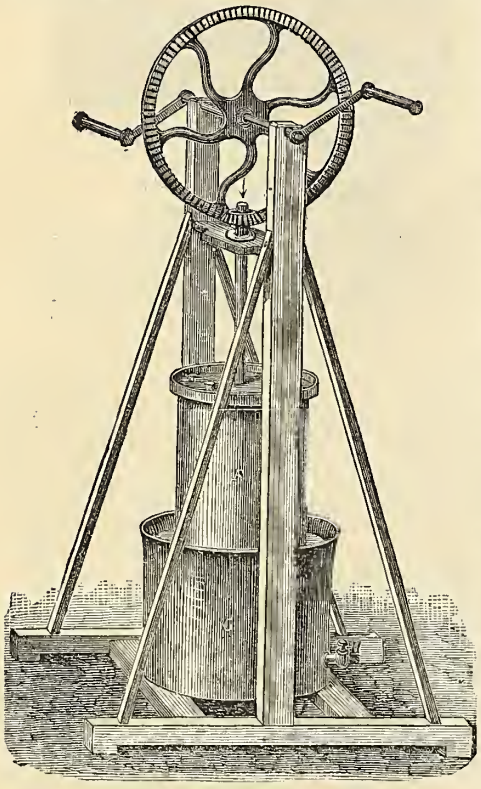


Fig. 1.—STIERNWARD'S SWEDISH CHURN.

some points which are made much of in some recently made churns. It consists of a tin cylindrical receptacle, figure 2, *F*, provided with 3 wings inside, *e*, *e*, *e*, which are pierced with holes. The dasher consists of a central tubular axis, having 3 wings, *E*, that are pierced with holes. A small turbine, *T*, is fitted at the bottom of the axis, with which it is connected. The axis is provided with a pinion at the upper part, which connects with a gearing upon a shaft and crank fitted in a frame, furnishing the motive parts, figure 1. The operation of the churn is as follows: The cream is put in the churn, *F*, which is surrounded by a jacket in which hot or cold water may be placed to warm or cool it—it is churned by the revolving dasher, *E*. As this revolves, air is drawn down the tubular axis by the operation of the turbine, *T*, and is forced through the cream, and is carried with it through the holes in the wings of the churn and the dasher, and serves to help, as it is claimed, in the production of the butter. The inventor claims that this churn will separate the butter directly from milk in quite as short a time as when cream is used, and that the remaining milk is perfectly sweet, and can even be boiled without curdling. In the present search for novelties in dairying, this may offer some hints to the ingenious and tireless inventors of new churns.

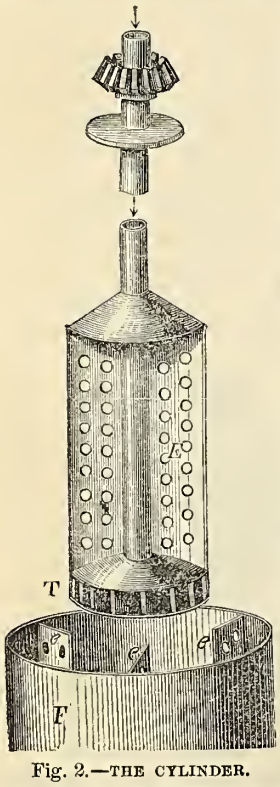
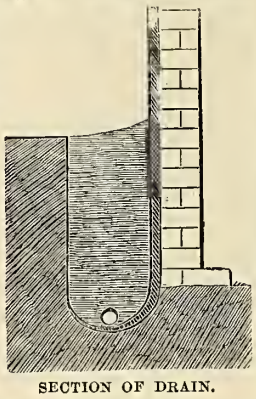


Fig. 2.—THE CYLINDER.

Draining a Wet Cellar.

There is frequent complaint of wet cellars. Several communications are now before us requesting advice as to preventing the entrance of water through the walls of cellars that are dug in rock or clay. Where surface water fills the soil it will penetrate a cellar wall unless means are provided to carry it off. The most simple method is that shown in the accompanying engraving. This is intended for those cases in which surface water enters the walls, being prevented from sinking by impervious clay or rock above the level of the bottom of the cellar. In these cases it is not necessary to drain lower than the top of the impervious stratum. The drain here shown is carried down to this stratum, and tiles, stones, or gravel are laid to carry off the water which is caught in the drain. The cellar wall is protected by a coat of cement, shown by the dark line; this is carried under the drain tile so as cut off the flow of water and turn it into the channel. The trench should be filled with broken stone or gravel, so as to furnish an easy course for the surface water to sink to the tiles. In case water rises in the bottom of the cellar the drain should be dug at least a foot below the level of the floor. In choosing a site for a house much trouble may be avoided by examining the spot where it is proposed to place the foundation, and in digging for this, where water is present in the soil, or it may be expected, the excavation should



SECTION OF DRAIN.

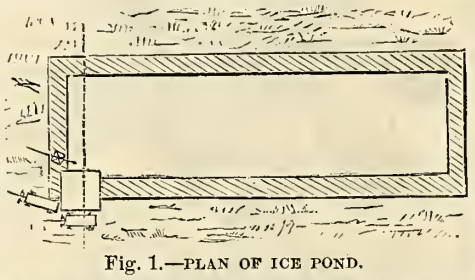


Fig. 1.—PLAN OF ICE POND.

be large enough to allow the drains to be put in when the foundation is built. This will prevent all trouble and inconvenience that might arise.

An Artificial Ice Pond.

The mild weather of the ice-making season renders any description of ice ponds somewhat tantalizing, but as an ice pond cannot be made in a day, nor in the winter, it is pertinent to describe anything new in this way, although there may be no ice. A novel idea in the way of ice ponds is communicated by Z. M. Jin, who, following our suggestion for a Water Collector, (Oct., 1879, p. 384), is making an

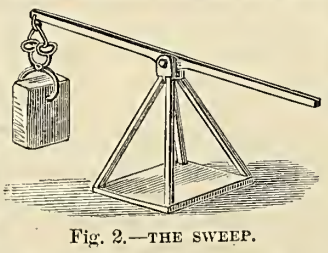


Fig. 2.—THE SWEEP.

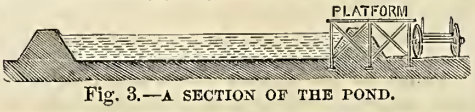
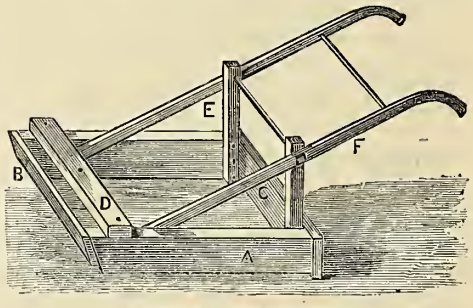


Fig. 3.—A SECTION OF THE POND.

ice pond on a similar plan. At figure 1 is his plan of the pond, which is partly made by an embankment 4 feet high. The pond is 40 by 150 feet, which would give 4,500 cubic feet, or about 150 tons, with a thickness of 9 inches of ice. A platform is built at one corner for loading the ice, and a derrick made in the fashion of the old well sweep, is fixed on the bank near by. The sweep is shown separately, with the tongs, at figure 2. At figure 3 is a section of the pond, showing the banks and the platform. It is intended to fill the pond with water by means of a pump, worked by a windmill situated near by.

A Handy Corn Coverer.

Mr. Clarence Hollins, Todd Co., Ky., sends a sketch of a home-made implement which the farmers in his vicinity have been using for a number of years for covering corn, peas, beans, and other large seeds planted in rows. "It does the work nicely where the ground is mellow."—The runners, *A*, are of heavy wood (oak) to give weight, 3 feet long, 6 to 8 inches wide, and 4 inches thick. The front piece, *B*, is 20 inches long, and is raised an inch at the bottom, to allow the loose soil to pass under, while it throws the sods and stones out of the way. The back piece, *C*, is an inch lower on the bottom than the sides, so as to drag in the loose soil and fill up the furrow, leaving the seed well covered, and the soil level and smooth. The bar, *D*, binds the whole together; it has a hole in the center, to which the clevis for the whiffletree is attached. The standards, *E*, are fastened in place



A CHEAP CORN COVERER.

with large nails, and are of sufficient hight to support the handles, *F*, by which the implement is easily guided.—Mr. H. having just completed a useful home-made affair from a drawing in the *American Agriculturist*, was impressed with a desire to return the favor, and sends the above, an example that we strongly commend to other farmers.

Hints and Helps For Farmers.

DRAINING SLOUGHS.—An Iowa farmer has a slough in his farm, which prevents the working of the land in the spring, until it is too late to plant, and wants to know how to drain it effectively. This is but one case in hundreds, in which the same difficulty occurs. To remedy it is a simple matter. When the ground is dry, plow out the center of the swale, until as deep a trough as possible is opened; then plow back and forth in the center to loosen the ground, shovel out the earth, and put one horse in the ditch with the plow to loosen the earth still more, until it is 2½ or 3 feet deep. Then make a smoothly graded trench with a spade, and if stone or coarse gravel is handy, fill the trench 2 feet deep, and as wide as may be convenient; or if no stone is at hand, lay 1 or 2-inch tile at the upper end, down to the fork of the swale, as shown in figure 1. There dig a sink or "sump," figure 2, to collect the water with any sediment that may be in it, and lay 2 or 3-inch tile from the sink to the outlet. Then cover the stone or gravel with the plow, and smooth the whole hollow down to the center from both sides;

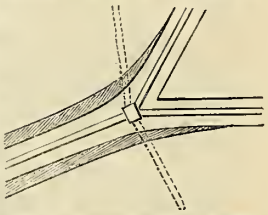


Fig. 1. DIRECTION OF TILE.

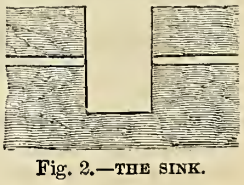


Fig. 2.—THE SINK.

if tile is laid, this should be covered at first with soil carefully by hand, and trodden down. Afterwards the trench may he filled by the plow.

To Cold-Smoke Meat.—Meat is injured in smoking by excessive heat. The smoke should be

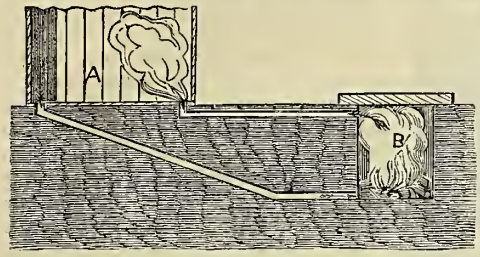


Fig. 3.—ARRANGEMENT FOR COLD-SMOKING MEAT.

cold to produce the best effects. To make cold-smoke, a fire pit may be made 10 or 12 feet from the smoke-house, and two feet deep. A flue of stone, pipe, or tile, may be laid from the hottom of the house, to the bottom of the fire-pit, and one from the top of the fire-pit, to the floor of the house (fig. 3). When the fire is lighted, and the pit is well supplied with bright coals, it may be filled up with green hickory wood in small pieces, or chips, and the cover, a flat-stone, placed over it. The smoke will then be strongly charged with Pyroligneous Acid, and will be cool; this will give the best flavor, and the longest keeping qualities to the meat.

How to Tar Hemp or a Rope.—A coil of rope or hemp yarn, may be tarred by the use of the contrivance here shown (fig. 4). It is a trough to hold hot tar, having a roller fixed on each edge at the sides, and one at the bottom. The rope is drawn from the coil through the tar, and upon a reel, as seen in the engraving. If too much tar is carried over, two rollers may he used on the side where the rope passes out, and the upper will press out the surplus tar, or a bunch of oakum may be fastened below the roller to wipe off the loose tar;

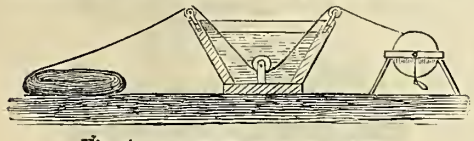


Fig. 4.—MACHINE TO TAR A ROPE.

but unless the tar is wasted, it will be well to let some extra go over the roller, as it will be absorbed by the rope on the reel. To tar a thick rope, it should be drawn over the two rollers, and as it passes, the tar may be hrushed on with a coarse hrush. The reel may be turned slowly, and the rope drawn from the coil placed at some distance, to give sufficient tension to the rope. With a machine like this, tarring a rope is rapid and easy.

A Harness Bench.—A subscriber from Indiana, sends a sketch of a harness bench, with the following description. The bench is a common four-footed one, and serves for a seat. The clamp is made of two halves of a barrel stave, screwed firmly to the block which is fastened to the bench by a pin, that is made firm by putting in a wedge underneath the bench. The edges of the jaws are beveled so as to come together evenly, and take a firm hold of the leather. They are held together and pinched by means of a pin and small key, figure 5. The pin is slotted, and the key passing through the slot is wedge shaped, so that the jaws are tightened by

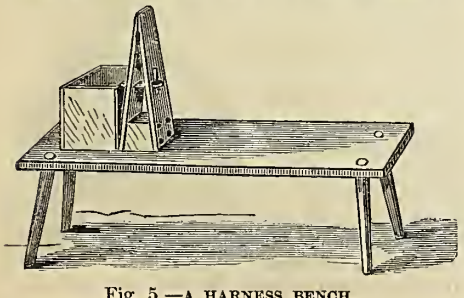


Fig. 5.—A HARNESS BENCH.

pressing the wedge down in the slot. The box in front, is for tools, thread, wire, rivets, etc., etc.

Washing Dairy Pans.

There is much labor in washing milk pans, and as, in careless hands, this work is certain to be ill done, it is well to contrive some plan in which it can be done easily, and then it will be more likely to be well done. By using some simple contrivance, pans may be washed without handling them. Recently the writer, having occasion to show a hired man how to clean some dairy utensils, made use of a Whitman Fountain Pump, which threw a stream of water into the cans and pails with considerable force, and cleansed them perfeetly in a very short time. This was done on the grass outside of the dairy-house, and the convenient method may he elaborated so as to make a most serviceable plan of washing, thus saving much labor. The first requisite is a rack to hold the pails and cans, sloping forward slightly, so that the water can he easily forced in and will run out readily. A rack, made as in figure 3, consisting of a shelf slightly sloping, supported by side pieces, and a foot-board, will answer the purpose. The pails aud cans may be laid upon this shelf, a light cross-bar preventing them from slipping forward, and may be piled one upon another. A stream of water can be directed into them through a hose, either by the pump above mentioned, supplied from a pail, or by a hand-force pump, a Blunt's Universal pump, for instanee, with which the water may he forced from a well at some distance. But the plan, once explained, can be easily modified or changed to suit any eireumstances; the easy washing of the pans being readily understood. Another method is shown at figure 1. This consists of a stout standard supplied with galvanized iron rods, upon which the pails may be hung and washed. A very complete apparatus may be made by carrying a lead pipe, with hranches and jets, to the mouth of each pail or can, and connecting the hottom of the pipe with a hose from the force pump. After the pans have been washed, they may be left to hang upon the stand to drain and air. A frame of a similar kind for the washing and airing of shallow pans, is shown at figure 2. This consists of a standard with double rods spreading so as to give a firm seat for an inverted pan, shown also at figure 4, with the pan reversed. These may all be used in the washing-room of a dairy house, made as it should he, with a cement floor sloping to a drain; or they may be fitted on a plank floor outside, so placed that the water will

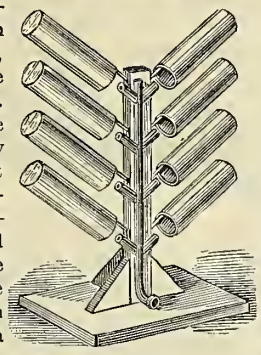


Fig. 1.

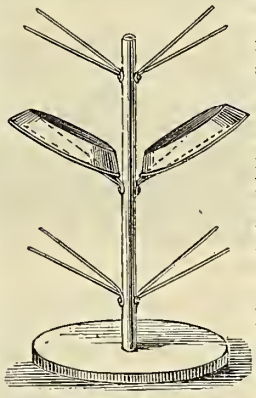


Fig. 2.

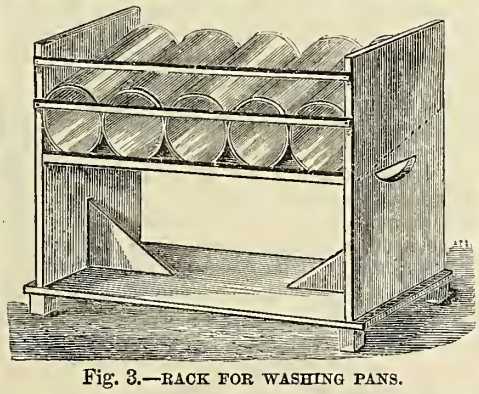


Fig. 3.—RACK FOR WASHING PANS.

flow off on the grass, or into a channel which will take it where it may do the most good. The idea is given in its crude and partly developed condition, to be improved upon as may be possible by those who perceive its usefulness. It is certain that much may be done to simplify the laborious hand-washing, which is especially disagreeable in the winter time, and is always slow and sloppy work.

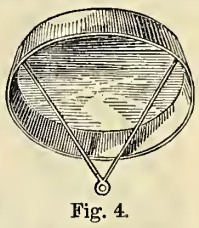


Fig. 4.

Our Domestic Animals.—To get an idea of the vastness of the interest of farm animals, we must look at the number this country possesses. Thus there are: Horses, 11,000,000; mules, 1,700,000; cattle, 32,000,000; sheep, 38,000,000; swine, 35,000,000. When figures are in the millions, as these all are, the idea of greatness is about the only one that is conveyed; but with that thoroughly in mind, the importanee of farm animals is better understood, and their relation to our indivinual and national prosperity is much more easily comprehended.

The Manufacture of Amber Cane Sugar

Attempts have been made for several years past to overcome the difficulties in seeuring the granulation of the sugar contained in the juice of the different varieties of sorghum grown for that purpose. The trouble has been that the juice in the process of boiling down produced molasses which possessed an inferior flavor, and from which a very small proportion of crystalized sugar could be obtained. About a year ago a number of western men, interested in this matter, formed themselves into the Mississippi Valley Cane-Growers Association for the purpose of making organized efforts to secure a more successful result. The members planted cane, and worked it up into sugar under some improved processes with unusual success; and sugar of excellent quality has been made in many of the Western States, from Texas to Minnesota. The variety of cane grown in most of these experiments has been a new one, a supposed cross or hybrid of the Chinese and African sorghums, and known as Early Amber Cane. This has the advantage of early maturity, and can be grown wherever corn succeeds; its earliness also enables the sugar-making to be carried on during warm weather, when the process of granulation is more

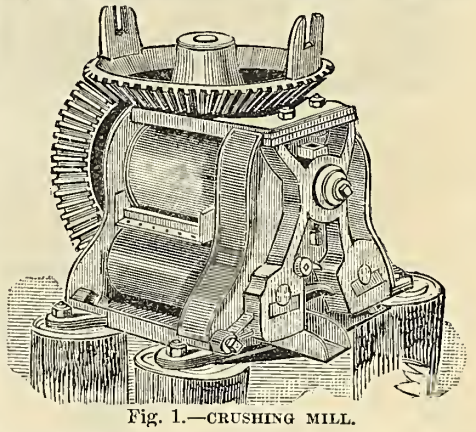


Fig. 1.—CRUSHING MILL.

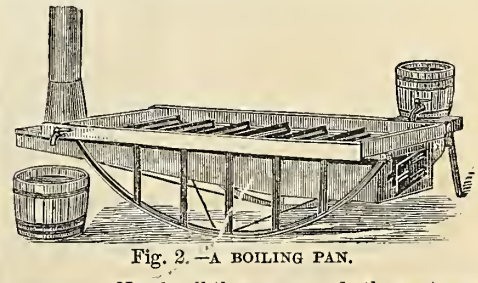


Fig. 2.—A BOILING PAN.

complete. Nearly all the sugar made the past season has been from this variety, and one lot of 45,000 pounds has been made by one party at Crystal Lake, Ill., and sold in the Chicago market. Of this

lot a sample was sent to us by Mr. I. A. Hedges, who is Secretary of the Association above mentioned. Mr Hedges has been closely identified with the sorghum sugar interest for some years, and has recently published a small book on the

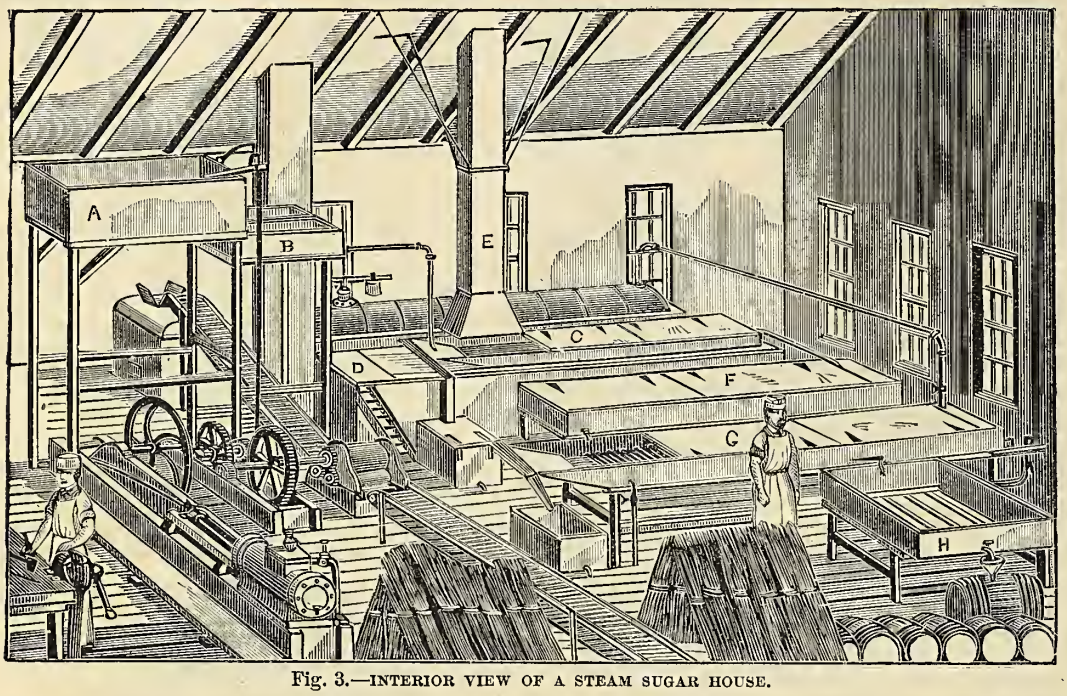


Fig. 3.—INTERIOR VIEW OF A STEAM SUGAR HOUSE.

subject, in which he gives details of what has been effected so far in producing sugar from sorghum.

It would appear that sugar of excellent quality may be made from Amber Cane wherever corn can be grown; the only question now to be solved is, can it be grown profitably. *Profitably* is a relative and not absolute term in this sense. A farmer may grow cane and make sugar for his own use profitably when he could not devote his sole attention

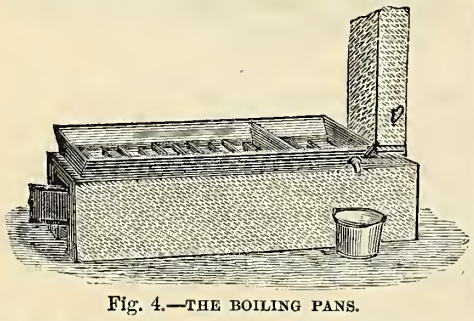


Fig. 4.—THE BOILING PANS.

to the business with profit; he may occupy his time and facilities that are not otherwise employed, and so in reality procure his sugar with but a very small outlay, just as one may make maple sugar at this season with profit by using time that would be otherwise idle. To know how this may be done is therefore a matter of interest to all farmers.

Amber Cane is grown and cultivated precisely the same as corn; the soil need not be in high condition to produce sugar; a fairly good, clean soil having lime in its composition, or being fertilized with 300 lbs. of gypsum per acre, is the most suitable. The crop is ready for gathering when the seed is hardening, or when almost fully ripe. The stalks are topped, stripped of leaves, and cut, bound in bundles, and set up in shocks until required for milling. The stalks are pressed in a mill having powerful rollers (fig. 1), and operated by horse or other power. The juice is gathered in tubs or a vat, from which it can be raised by a pump and poured into the filter, from which it passes to the boiling pans (fig. 4). The whole process of boiling, clearing, or defecating, and concentrating the juice, may be explained through the accompanying plan (fig. 3) of a sugar factory designed by Mr. Hedges and described by him in the book previously mentioned. The building is 60×40 feet on the ground and 20 feet to the eaves, and if it is practicable, at the foot of a bank, upon which the crushing mill may be placed, so that the juice may flow by gravity to the boiling pans. This plan, however, contains the whole of the machinery, the engine is seen on the left, and the mill with feeding and discharging apron connected with it on the right. The discharging apron conveys the "begasse" or crushed stalks into the furnace beneath the boiler of the engine. The juice flows from the mill into a sunken tank under it, from which it is pumped into the elevated reservoir, *A*. From this it passes into temporary tanks, *B*, in which it is "neutralized" by the addition of cream of lime, by which the natural acidity of the juice is corrected and the solid impurities are caused to settle. The cleared juice is drawn by a pipe into the heater, *C*. This is 25 feet long, 3 feet wide, and 14 inches deep, made of sheet iron three-sixteenths of an inch thick. The heater slopes to one end to facilitate skimming, and is covered with lids, to encourage the boiling. The boiling juice is skimmed, and the scum is drawn off with a light scraper into a tank, *D*, at the upper end of the heater. The steam from the heater is carried off through a chimney of boards, *E*, passing through the roof. The juice passes through this pan in a steady stream through a pipe into a second one, *F*, made of sheet iron, enclosed for protection in a wooden tank. In this the juice is left to settle, and is drawn off into a third pan, parallel with it, *G*, in which it is again boiled with the addition of more cream of lime to neutralize acidity, or albuminous matter, such as the white of egg or blood, is added to cause the liquid to throw up in the form of scum all impurities contained in it. In the plan, this pan or defecator has a steam coil for heating. The scum from this pan is raked off into the spout at the upper end,

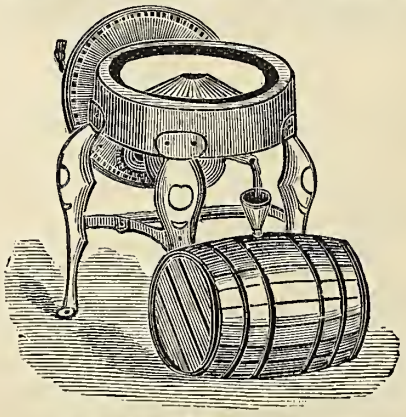


Fig. 5.—THE "CENTRIFUGAL."

from which it passes into a vat where it settles and separates, and from which the clear syrup is drawn off to be returned to the heaters. When sufficiently concentrated the syrup is drawn off into the cooler, *H*, and from this into barrels. If intended for sugaring, the syrup is more carefully worked and purified in this pan, and then run off into a granulating vat sunk in the ground under the pan or elsewhere, in which, after standing some time, the sugar separates, and the molasses is pumped off. For small works a finishing pan (fig. 2) designed by Mr. Hedges may be used. This can be emptied by tilting into a movable vat, from which the molasses may be removed, to granulate. After granulation the sugar is separated by draining in a vat or barrel, or is "swung" in a "centrifugal" (fig. 5) in a similar manner to that in which honey is freed from the comb. The process of sugar-making does not depend upon the use of any particular machinery, but upon certain mechanical and chemical operations, in which the water of the juice and any vegetable fibre, or other impurities contained in it, are removed, and from which the actual sugar is separated. Mr. Hooker, of Illinois, has succeeded in producing sugar in the following simple manner: A wooden, 2-roll, mill, fig. 6, a tub, and an evaporator, made on the same plan as that shown at figure 2. The juice (27 gallons) was poured into the boiler, and when the juice was warm a tablespoonful of soda was added; the scum was removed as it rose; when the juice was reduced to a thin syrup a tub of fresh juice was added, the soda was again used, and the skimming and boiling repeated; this process was continued a third time, and the juice boiled down until sugar was found by the tests used in making maple sugar to be ready to granulate. The syrup was then run into a tank and set away in a warm place to granulate and separate. The sugar made in this way was of

Fig. 6.—A TWO-ROLL MILL.

good quality; but from defective neutralization the quantity was too small and the molasses was acid.

At Crystal Lake, Ill., the cane from 600 acres was used the past year. The crop was very light, the season being unfavorable and the growers inexperienced; much of the planting was not completed until June 20th. The yield was so satisfactory that preparations are making for an extensive business the coming season. In this instance the best sugar machinery was used, including a costly vacuum pan and the best practical and experienced sugar experts were employed. The parties consider that the question of the profitable manufacture of sugar from sorghum is settled, provided the growers produce the syrup, and experienced sugar-makers work it up into the final product with the proper machinery.

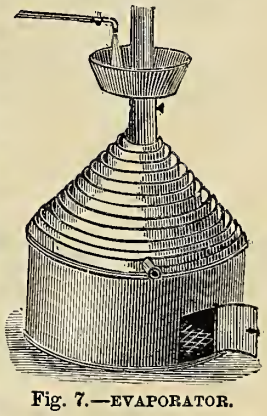


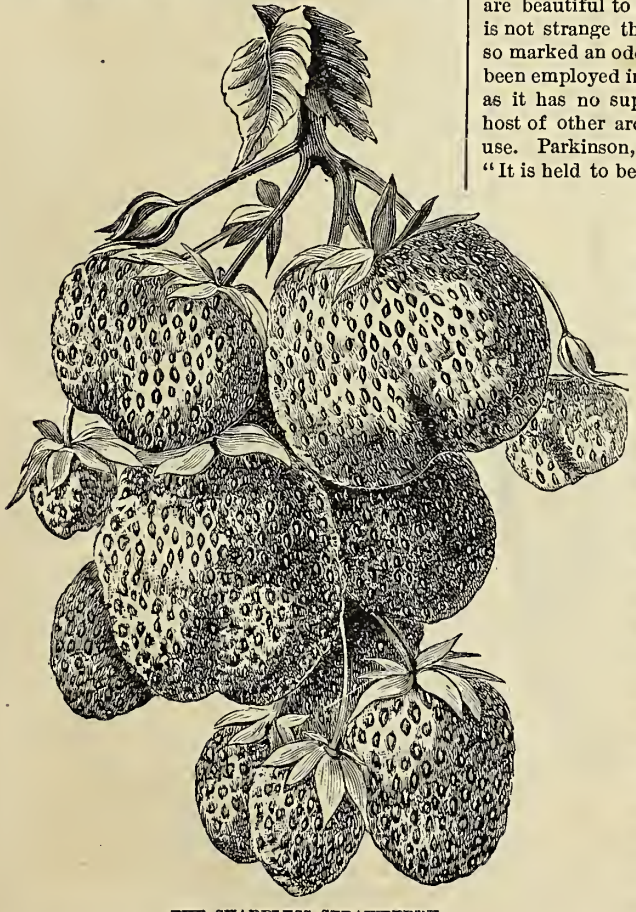
Fig. 7.—EVAPORATOR.

The Sharpless Strawberry.

Among the berries of reeent introduction, the *Sharpless* appears to have stoed the test of last year's cultivation in a very satisfactory manner. It is certainly a remarkable plant in its foliage, the leaves on even very young plants being enormous. This fact must be borne in mind in planting it, as it must be given abundant room if one expects to grow large fruit. Some of the large varieties produce a few very large berries on a plant, but what is wanted, is large crops of large berries, and from what we have seen of the Sharpless, it looks as if it would not disappoint us in either the size of the berries, or the number of them. To judge of the value of a variety, one should see the fruit on the plants. A few selected berries from a large bed, give no idea of what was left behind. Mr. E. P. Roe gave us last year a photograph of the whole produce of a little vine, which had been set in his grounds at Cornwall-on-the-Hudson, only two months before the "crop" was taken from it, and we had an engraving made of the picture. Those unused to strawberries, may think it does not tell a very large story for the Sharpless, while strawberry-growers will see in it indications of a large yield, especially considering that this is from a recently set plant, that should not have borne anything. It shows the peculiar shape of the fruit, and also its tendency to irregular forms, a character less manifest on old, and well established plants. As to quality; while we do not rank it as the very best, it is remarkably good for a very large berry, and we do not think there will be any complaints on the score of excellence. We shall look in vain for the highest quality, joined to the largest size.

The Fraxinella.

Sometimes old plants are much rarer than novelties, and such is the case with Fraxinella, which has been in cultivation for well nigh 300 years. The plant is a hardy perennial herb, belonging to the Rue Family, and is a native of Southern Europe. It has a large strong root, from which arise several



THE SHARPLESS STRAWBERRY.

stems about two feet high, though in rich soil, well established plants are sometimes three feet. The compound leaves consist of from 9 to 13 ovate leaflets, and as they bear a resemblance to the leaves of the Ash-tree, the plant was called Fraxinella, the diminutive of *Fraxinus*, the botanical name of the Ash. The flowers terminate the stem in a large, spike-like cluster 8 inches or more long, consisting of flowers of the shape shown in the engraving; the pendent character of the fifth petal, and the peculiar curving of the conspicuous stamens and styles, give the flowers an air of quaintness quite peculiar. The petals are of a light purple or purplish-rose color, handsomely and distinctly viened with dark-red. There is a variety with pure white flowers, and the two kinds together make a pleasing contrast. The plant has a very strong odor, all parts, but especially the stalks to the flowers, being furnished with glands which secrete a volatile oil; this has an odor much like lemon, but when the plant is rubbed or bruised the scent is very strong, reminding one of turpentine, and to most persons not agreeable. A well known horticulturist once told us that could he have but one perennial flowering plant it would be Fraxinella, mentioning as a reason for selecting it, that, in addition to the beauty of its flowers, it possessed such an agreeable perfume. We rather agree with Old Parkinson, who in "The Garden of Pleasant Flowers" (1650), in describing the plant, says that the leaves, etc., "are of a strong scent, not so pleasing for the smell, as the flowers are beautiful to the sight." It is not strange that a plant with so marked an odor should have been employed in medicine, but as it has no superiority over a host of other aromatics, it long ago passed out of use. Parkinson, already referred to, says of it: "It is held to be profitable against the stingings of Serpents, against contagious and pestilent diseases, and in Epileptical diseases and other cold pains of the brains"—and much more besides. The plant is really a very stately and showy one, and while we would not, like the friend quoted, give it preference over all others, it would certainly be included in any choice collection of herbaceous perennial plants. Probably the chief reason that the plant is so seldom seen in our gardens is, that old seeds are of difficult germination, though scalding is said to help them. With recently ripened seeds we have found no difficulty. It may also be multiplied by dividing the large roots. The botanical name of the plant is *Dictamnus Fraxinella*, the first is an old Greek name for this or some other plant; the meaning of the other has already been given. We should not omit one striking peculiarity of the plant; in a hot day it gives off its aromatic oil in the form of a vapor, and so abundantly that it will burn. This is best seen in the dusk of a hot day; by applying a light near the lower part of the plant this vapor will burn with a sudden flash of flame two or three feet high. It does not appear to injure the plant at all, and the experiment is very astonishing to those who have never seen it before. The formation of this volatile, aromatic oil is so rapid and abundant that a fire flash of its vapor can be easily obtained from the same bush for quite a number of evenings in succession.

THE FRAXINELLA (*Dictamnus Fraxinella*).

Fruit-Growers in Texas.

Should Texas in 10 years from now suddenly appear as the great fruit-growing State of the Union it would not surprise us. With great capabilities in a most wonderful variety of soil and climate, she has also a people who are taking advantage of these, and a vast deal in the way of tree planting and horticultural improvement is going on, of which the rest of the country does not hear. Some five years ago, the owner of the principal nursery in the Southern States told us that his largest customers were in Texas, and that the bulk of his stock went to that State. As a natural consequence societies are being formed for united effort in the promotion of fruit-culture and horticulture generally. The North Texas Pomological Society has monthly meetings at Denison, and has a membership of about 40 of the most active fruit-growers of Grayson and adjoining Counties. Its Secretary, T. V. Munson, Esq., sends us a sketch of the meeting on January 3d last, and, as some of the matters presented have a general interest, we present them to our readers. In Texas, as well as, if not more than, elsewhere, fruit-growing is at present largely

A Battle with Insects.

And this Society, appreciating this fact, proposes to act not only on the aggressive, but with a combined effort. One method will be to trap certain insects at night. The Secretary writes, that at this meeting "several styles of lamps were presented for the consideration of the Society, which will adopt the form considered best, and have enough made to supply the members, each

paying for his own. They are to be used in our vineyards and orchards at various times during the

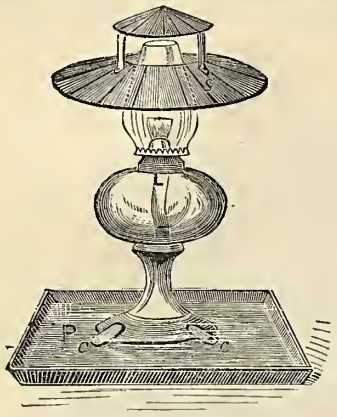


Fig. 1.—AN INSECT LAMP.

summer, to destroy insects flying at night. We propose to coöperate in this matter, and thus more effectually abate the insect nuisance." [Mr. M. sends a sketch of a lamp, figure 1, which embodies the ideas shown in various samples, and something like this will be adopted.—ED.]

"The trap consists of a small lamp (*L*), so constructed that wind will not blow it out, placed in the center of a broad shallow pan (*P*), to which the lamp is held from upsetting from wind, by three clamps. A double reflecting shade (*s*) of tin is to protect the lamp from rain, and check the flight of insects when attracted beneath it by the light, causing them to fall into the pan. An inch of water is kept in the pan, with a film of coal-oil (kerosene) on it, for the destruction of victims. The reflection of light from the oil will attract many insects directly into the large, shallow pan.

"An atomizer was also exhibited, which is designed to throw a fine spray of some offensive or poisonous solution, through the tops of trees, everywhere among the leaves, to drive out curculio and

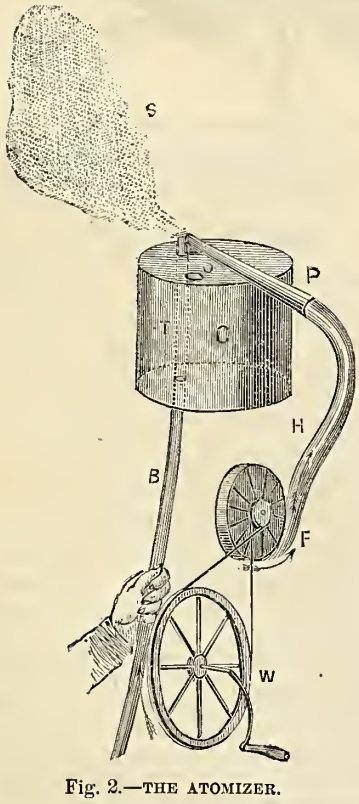


Fig. 2.—THE ATOMIZER.

codlings, kill canker worms in fruit-trees, to spray the foliage of vines, cabbages, etc.; to drive out or kill 'thrip,' 'leaf-rollers,' 'plant-lice,' etc., using strong solutions of carbolic acid, coal-tar, tobacco, or Paris green. It will far more quickly and efficiently do the work, and with a great saving of materials and labor over the force-pump commonly used for such purposes. A can (*C*) holding the desired solution, has a slanting tube (*T*), which starts on the inside near the bottom, and passes out a short distance near the edge of the top, with a small **V** shaped notch in side next to tube (*P*), which is soldered on top of can. This outer or top-tube tapering like a blow-pipe, has its small end just opposite the **V** shaped notch in tube (*T*), and about ¼ inch back from it. When air is forced through the outer pipe (*P*), liquid is drawn up from bottom of cup (*C*) through the inner tube (*T*), and blown to the distance of several feet, forming a cloud of fine mist (*S*). By attaching a hose (*H*), a power-fan (*F*) with a hand-crank-wheel (*W*), and suitable frame-work (which is not shown) to be supported on the shoulders by a strap, a continuous stream of mist can be blown; and the cup (*C*) supported upon a staff (*B*) held in the hand can be elevated and applied anywhere in the top of a tree. A bellows could be used in place of the fan. A working model of this was shown before the Society at its last meeting by the writer."—To our correspondent's inquiry we reply that we have seen no such apparatus offered, patented or otherwise; the nearest approach to it is one in which a bellows carries the atomizer at the end of the nozzle.

The Onion Smut.

A few localities in the Eastern States have long been known as the centers of the onion crop. In some of these, where the onion has been the chief crop for the last half century, the culture has, within a few years past, greatly diminished, and in some cases it has been altogether abandoned. This change is due to the appearance of a destructive pest in the form of a fungus known as the *Onion Smut*. This smut makes its appearance while the onions are quite small, and if they are not entirely destroyed, are of very little value. A careful examination of a diseased plant in the early stages of the smut, shows that the fungus consists of a multitude of small filaments, or threads, collected in knots and stringy masses within the substance of the onion leaves and bulbs. At a later period a vast multitude of dark particles are found; these are so fine that they can only be seen in a mass as a black, dusty powder. At this time the skin of the leaves becomes broken, usually in long, narrow lines, and this dust, which is really the spores of the fungus, are set free. Figure 1 shows a young onion plant with the ruptured skin, or epidermis of the base of the leaves and the black powder—the *smut*—seen in lines upon the surface. Under the microscope, each of the dusty particles resolves itself into a somewhat spherical body, upon the surface of which are numerous small projections. Two of these spores are shown in figs. 2 and 3. The Onion Smut belongs to a group, or division, of fungi better known to most farmers by the common representative, the Corn Smut. Unlike the *Rusts*, the smut fungus is not believed to pass in its development through distinct states or forms, upon widely separated plants, and, therefore, for its prevention we do not have to look outside of the onion plant. It is generally supposed that it has come from the wild onion, or garlic, and, therefore, in the extermination of all such wild plants in the region a remedy may be found. The spores of the smut being very small, may cling to the surface of the onion seed and be planted with the onions; it is, therefore, a precaution to soak the seed, that the water may remove the spores from their rough surface. When the smut has been allowed to perfect itself, the soil is more or less filled with the spores, and gives truth to the expression among afflicted onion growers, that "the disease is in the ground." The question of ridding the soil of the onion smut resolves itself into simply this: "How kill the spores therein?" Manuring the land, and giving it the highest culture and continuing the growing of onions will not do it. It *may be* that by so doing the smut will not be very troublesome, simply because strong, healthy plants are better able to withstand its attacks. This is a law which holds good with diseases in general: the better the health; the more vigorous the subject; the greater the vitality, the less disposed is the subject to disorders. But this is not the best way to treat the onion fields that have been *smutted*, because they are usually already under good culture. There seems to be but one way—cease growing onions on the land for a term of years sufficient to exhaust the vitality of the dormant smut spores in the soil. Grow other crops, and in the course of four or five years the smut spores will have died. At present the trouble is not widespread, and knowing the fatal nature of the pest, every precaution should be taken that its limits be not extended. Those buying and selling seed should bear this in mind, for a little care in not taking seed from a smutty locality, may make thousands, if not millions of dollars, difference in the great and growing onion interest of our country.

Fig. 1.

Fig. 2.

Fig. 3.

Greens For Everybody.

The real value of all food is not to be judged by the amount of nutriment it contains. Many of the green vegetables we consume contain so little of actually nourishing matter, that if one were confined to a diet of them, he would soon starve, as the digestion could not extract from them enough to sustain life. Still, their utility as articles of food is not doubted, and the very general desire for them, especially in spring, when most persons have been long deprived of them, is sufficient evidence that they are needed, did not physiologists tells us that the salts they contain are required by the system. Many, especially farmers, depend upon various wild plants for their first greens. The boys are sent over the meadows for Dandelions, to the brook sides for "Cowslips," as the Marsh-marigold is improperly called in this country; besides these, Nettle, Dock, Poke, Milk-weed, and numerous other wild plants, are used as pot herbs. Indeed, almost any plant that has no unpleasant taste and no injurious properties, and will cook tender, appears to be used in some part of the country. It is rarely that a farmer raises anything to serve as greens, unless he may have kept his cabbages in a cellar, and has saved the stumps to set out in the spring to give a crop of sprouts, and very good indeed they are. The trouble about the wild supply of greens is the time it takes to gather them, and the uncertainty of finding them when wanted. Moreover, they are generally not so tender as the more rapidly grown products of the garden. There is, perhaps, no useful plant seen in farmers' gardens so seldom as Spinach. During the past mild winter there has been hardly a day that it has not been abundant in the city markets, and in a mild winter like the past it may be had almost daily on the farmer's table, while in ordinary winters he can have it whenever the snow is off and the ground thaws. For this early supply the sowing must be made in September, and it is well to "stick a pin" just here in the memory, to make a sowing. Our object at present is to urge a spring sowing. While the crop from this will not be so early it will be most acceptable, and vastly superior to any wild plant, and those who become accustomed to it now will be sure to prepare next fall for an early supply next spring. Sow the seed in the richest soil in the garden in drills 15 inches apart; as it is a hardy plant the seed may be sown as early as the soil can be worked. In two weeks make another sowing, and two other sowings at intervals of a fortnight will not come amiss; this will bring the latest sown into hot weather when it soon runs up to seed and other things take its place. When the largest leaves of the spring

sown are 2 or 3 inches long, pull or cut out for use where it is thickest, and what is left will grow all the more rapidly. Farmers who live near markets will find spinach a profitable crop, especially that which has been wintered, though the spring sown will pay fairly. In ordering seeds do not forget a paper of "Spinach Beet" and of "Improved Dandelion." The first named is to be sown like beets to give greens during the hot summer; by cutting the outer leaves for use, taking care not to destroy the central bud, it will give a continuous and abundant supply of most excellent greens. The dandelion is to give greens early next spring. It must make a season's growth to get strong roots; these are to be thinned, or better, transplanted to a foot apart, and next spring they will give an abundant supply of greens as much better than the wild plants as one can imagine. Try it!

The Honey Locust Hedge.

Having described the Honey Locust last month, we now consider the method of making a hedge. One can start with the seeds, or purchase young trees from the nurseries. Of course it is cheapest, so far as outlay is concerned, to begin with seeds. If one can afford to buy the plants he will gain a year, or perhaps two, in making the hedge.

Sowing the Seeds.—In our only experience with them, the seeds had been kept all winter in the pods; they were taken from the pods and sown at once, coming up as readily as beans. Purchased seeds may have become too dry, and it will be safest to soak them by pouring on warm water and allowing them to remain in the water for about 24 hours. A seed-bed of good light soil should be prepared, and the seeds sown as if they were beans, dropping them about 3 inches apart in the drill. The rows, if to be worked by hand, may be 15 inches apart, and twice that distance if a horse cultivator is to be used. During the season the young trees are to be well cared for by working between the rows and pulling up the weeds that appear in the rows. If any plants are crowded by too thick sowing, thin them while quite young.

Setting the Hedge.—Usually the plants will be large enough when one-year-old, but if they have not made a strong growth they may be allowed to grow another year. Nurserymen furnish the plants at one or two years old as may be desired. The first thing to be done with the plants, whether home-raised or purchased, is to assort them according to size, making two or three sizes. The object of this is to secure uniformity in the hedge; if a small plant is set between two large ones, the larger plants will keep the advantage, and there will be a weak place in the hedge. Besides assorting, the plants must be prepared by trimming, cutting back the long tap-root, and shortening the tops by cutting off the main stem and larger branches about one-half. This is very important, the object being to make the plant branch near the ground, which it will not do if the tops are all left on. In these operations, do not expose the roots to the air more than is necessary. The line of the hedge should be well plowed, and harrowed, but no manure will be needed; it should be a well prepared bed about 4 feet wide, in the center of which the hedge is to be set. It is very important that the hedge be set straight, and this can be best secured by stretching a line as a guide in planting. The plants are to be set 8 inches apart, and may be put in with a dibble, a large trowel, or by opening a cut with the spade, whichever method the planter may be most familiar with. A proper hedge—thick at the bottom—can only be made in four or five years, and it must have each year a severe cutting back, which should begin the first fall, cutting the plants back to a hight proportioned to their growth. But of this it is not our purpose to treat at present. To answer some inquirers, we may say that in localities where the Osage Orange is perfectly hardy, we should prefer it to Honey Locust, on account of its greater beauty if for no other reason; but there is a wide belt where it is uncertain, and still another where it will not endure the winters, and in these the Honey Locust is the most available of all hedge plants thus far tested. It has been objected that the Honey Locust is not suited to hedge-making because it is naturally a large tree, and can not be dwarfed without injury. The objection is entirely without weight, as we know that it has been in successful use for over 30 years; besides the same applies to the Osage Orange which, when it has a chance, will grow to a tree 60 feet in hight.

Peas in Plenty.

"This is not a pea country," said an Englishman to us, and he was right, it is not in the sense that England is, where they can take picking after picking from the same vines. The hot sun that gives us our green corn and tomatoes, which English gardens cannot have, puts an end to our peas. But we can have them in abundance during their short season, and should have them in far greater plenty than we do. Farmers are apt to be content with two or three messes, and many find it too much trouble to grow them at all. One great obstacle to an abundance of peas, is the necessity for sticking or brushing them, but that, as we shall presently show, may be for the most part avoided. The great point with early peas is to start early; select a piece of light, dry soil, all the better if it slopes to the south, and just so soon as it can be worked, plow and harrow it, furrow out rows at least 6 inches deep, 3 feet apart for dwarfs, and 4 feet for the taller kinds. Then scatter a good supply of the best and finest manure in the furrow, and sow the peas upon the manure, if well rotted; if not, cover the manure with an inch or so of soil. Then by the use of the rake or hoe, cover to the depth of 3 inches. Some cover only an inch at first, and as the plants show themselves, gradually draw in the earth, until the seed is 4 or 5 inches deep; the deeper, the better the plants will stand hot weather.

Varieties.—One who looks at a catalogue, finds a puzzling list of names, and it may help him to know that for the earliest peas, there are several names for what is essentially one and the same pea. Those not familiar with the matter, should know that there are two kinds of peas, the round and the wrinkled, and that there is as much difference between them in quality, as between field corn and sweet corn. The earliest peas are round. The wrinkled peas, if wet weather comes after sowing, will rot in the ground. Then again, there are dwarf and tall sorts of both kinds; the dwarfs are a foot or less high, the others grow from 2 to 5 or more feet. It need hardly be said that the tall kinds produce more from the same land, as they have the most vine; though the dwarfs may be planted closer, they, so far as our experience goes, are not so satisfactory as the others. Great claims are made for some of the newer dwarfs, that we have not yet tried. For general use, "Daniel O'Rourke," and "Carter's First Crop," are the best very early. Then comes "Alpha," the earliest of all the wrinkled peas. For the main crop, no pea is better than "Champion of England," and probably none ever will be. This should not be sown until the ground is dry and warm, or the seed may rot. "Bishop's Long Pod" is intermediate between the early and "Champion," but a second sowing of "Alpha," a fortnight after the first, will do well for an intermediate crop.

About Brushing.—None of the market gardeners brush their peas, and while we would give brush or other support if practicable, as affording better crops, and easier picking, yet one should not go without peas because he cannot stick them. When the peas come up, the ground should be kept clean with the horse cultivator, or garden plow, and if any weeds come up in the rows, pull them out; when the peas are about 6 inches high, throw a furrow with a small plow towards them on each side. When they begin to fall over, turn them all to one side, and let them lie on the ground. Every two or three days, turn them over to the other side of the row, especially after a rain; this is done very rapidly by using a hoe-handle, or similar stick, running it under them, and turning over several feet of the row at once. The "Champion of England" should, if possible, have some kind of support, as that is longer in growing, is taller, and yields more pickings. If brush cannot be had, use cord or wire stretched between stout stakes or posts.

Pop-Corn and Its Varieties.

For some reason there have been of late an unusual number of inquiries concerning Pop-Corn. These come in part from those who would cultivate it for their own use, and in part from those who, having an impression that it is especially profitable, would engage in its culture as a business operation. As to this aspect of its culture—its profit, it is difficult to get at statistics, but from the fact that there are some persons who raise it year after year as a regular crop, we infer that it pays somewhat better than ordinary corn. As with all articles of produce, the supply of which is not regular, the price varies a great deal, it being some times twice or three times as high as at others, and those who grow it regularly, by taking advantage of times of scarcity, may make it pay in the long run. As to its culture, it is scarcely different from that of ordinary corn, but being smaller, may be planted closer. A light, warm and dry soil, and some stimulating fertilizer give the best results. It is most frequently sown in drills, which are 30 inches apart, and the stalks 15 to 18 inches apart in the drill.

Fig. 1.—"LARGE POP."

The Varieties.—There are but four recognized by dealers, though occasionally others are met with, but do not appear regularly in the market. The leading kinds are "Large Pop" (fig. 1), "Rice" (fig. 2,) "Shaker" (fig. 3), and "Maynard" (fig. 4.) The first and third are the same so far as the size and color of the kernel go, but the "Large Pop" has 10 rows and a longer ear, while the "Shaker" has usually but 8 rows. The "Maynard" is 16-rowed, with much smaller kernels, which are whiter, and of a pearly appearance.

Fig. 2.—THE "RICE."

The "Rice" corn has very sharp-pointed kernels, giving the ear a peculiar ridged appearance; the rows, usually more or less irregular, are about 16, but often break up and run into one another. The diagrams give the real as well as the comparative size of the kernels and ears. As to which of these is best, we are unable to say; more seems to depend upon the condition of the corn than upon the variety, and those who are in the pop-corn business, always test the samples and purchase that which suits them without regard to variety. In popping samples of each, we could see

Fig. 3.—THE "SHAKER."

Fig. 4.—"MAYNARD."

scarcely any difference in quality. The yield, with a good crop, is said to be about as many bushels of ears of pop-corn as the same land would produce in bushels of ordinary shelled corn. It is always sold in the ear, and by weight, the price varying from one cent up to three cents per pound, but occasionally, when there is a scarcity, the price is considerably higher. The crop is not one to be commended to those who are in a hurry for the returns from their labor, as it can not be sold until it has been kept several months, and it is all the better if it has been kept for a year. The ability to pop is not fully developed until the corn is thoroughly seasoned. The drying may be hastened by artificial means, as we have had corn pop well when kept in a warm room for only two months after harvesting.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Monograms For Needle Work.

A mark of ownership upon any article of clothing is an important item when the garment is lost and it is desired to find the owner. Again, in sorting the clothing as it comes from the wash, a mark of some kind, easily found, but not too conspicuous, is a matter of practical value; in fact, there are sufficient reasons why all underclothing should hear its possessor's mark or name. There are very many ways of marking clothing, from a single letter stamped or written upon the fahric, or a simple stitch of thread, to the most elahorate designs worked with great care and ingenuity. To those persons who have a fondness for fine needlework, the designing and working of monograms furnishes an agreeahle occupation. Some monograms are given in the accompanying engravings, not expecting that they will he just the initials for many of the readers, hut rather as samples to serve as a guide—to suggest how designs may be made and the work done. The chances are only one in several thousand that any given person's initals are as shown in figure 3. The size of the monogram, and the color and quality of the thread used in its construction, and other like matters, will depend upon the kind of garment, nature of fahric, and "last, but not least," the taste of the designer.

Fig. 1.

A Burlesque Art Gallery.

At a fair for charitahle purposes that the writer recently attended, one of its most popular and attractive features was an Art Gallery—an "annex" to the main show, as it would have heen called in the Centennial year. There was just an even hundred "works of art" on exhibition, all going to show the duplicity and flexihility of our language, and the ingenuity of the "artist." For example, when a "View of Paradise" is announced on the catalogue, one's thoughts turn to some grand sight of a celestial city, but what he really sees is only a *pair of dice*. There has heen much excitement over contests in swimming during the past year, and to see one must, of course, he well worth the price of admission to the gallery. "The Swimming Match" had hut an ordinary glass of water in which to swim, and we wonder how it will "go off" when it comes to the "rub." "A Bridal Scene" was soon in full view, and for the moment it reminded one of a harness shop. "The Skipper's Home,"—a snug little cottage hy the sea as we had always heen told, proved to be only an ordinary slice of a very ordinary cheese. "Sweet Sixteen" excited much interest among the young men present. They were shown a collection of four times four lumps of cut sugar. Several dead mice proved to be "A View of the Catskills." The "Maid of Orleans" is a person for whom our historial reading had given us a very high appreciation. She was here *sweet* in character, but not so white as more *pulling* would have made her. Of course the lass was candy from (New) Orleans (Mo-lasses). It is said that one seldom sees "A Perfect Foot," hut here was one with all the inches, halves, quarters, etc., marked upon it, and yet looking at it one would think such a foot was the *common rule*. It was with some surprise that we saw it was announced that there was an "Eclipse of the Sun," as the almanacs had not foretold it, hesides it was evening, hut this did not prevent a hlack cloth from obscuring the view of a copy of the "New York Sun." "The Great American Desert" was the title of the next picture presented to the view of the lovers of nature and art. This was art in the form of a Pie! One of the neatest thing was a new version of the old song, "Coming Through the Rye." Three little artificial mice with their heads just sticking out of a loaf of rye hread. A pumpkin shell with a five-cent, toy time keeper upon it had the high sounding title of "The Watch on the Rhine." The pile of hinges, screws, knohs, holts, etc., were all "Things to Adore," and "A View of Boston," that home of wisdom, was presented in the central portion of a wheel, *The Hub*. "The Missing One" was a mystery to us until looking all around a large pasteboard *unit* was seen ahove our head. We can hy no means go through the whole list, hut as this is the presidential year, we close with "The Two Candidates." We did not make a choice, Dates heing sufficiently sweet without heing candied. These extracts from the catalogue of the Burlesque Art Gallery are given to afford a hint to those engaged in the management of fairs, etc. Such an exhibition, when well carried out, is capahle of affording a vast amount of innocent amusement, and may he made to add essentially to the receipts with a very small outlay. It should bc in the hands of those who have sufficient ingenuity to present a fresh lot of pictures, as many of the "old masters" have become badly worn by long use.

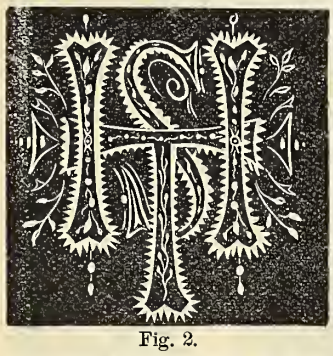


Fig. 2.

Fig. 3.

Household Notes and Queries.

THE MOTHS.—A word in season, is the one that tells. This is not the month for moths, hut it is getting so far along towards the time when the precautions should be used, that in giving them now, many will he saved the trouble of writing to ask what to do with their rohes, furs, etc. As strange as it may seem, we meet with intelligent persons, who do not understand the changes in insect life—all should know that we have first the egg; then the larva—some kind of a caterpillar, maggot, or gruh, something of the "worm" kind; this then goes into the pupa, or chrysalis state, remains quiet a while, then comes out as the perfect insect—either butterfly, moth, heetle, fly, or whatever its kind. In the clothes-moth it is the larva, the caterpillar, that does the mischief; its perfect form is popularly known as the "Moth Miller," and in due time will hc seen flitting ahout the house. Now the trouble arises from allowing this parent-moth to deposit her eggs upon or in the fahric, which afterwards furnishes the food for the young "worms." Prevention is thus seen to he the most important remedy. Hence various things that are distasteful to the mother moth, and not injurious to the furs, woollens, etc., are in frequent use to keep the moths away. Of such are Camphor Gum, Cedar Shavings, Pepper, Tobacco, etc., sprinkled on the fahrics. But the hest and surest method is, to put the goods away in a place—a hox, barrel, or even paper hag—where the moths cannot enter—and pack the goods in it before there is any chance for the eggs to be laid.

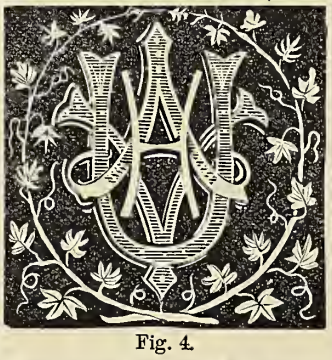


Fig. 4.

HOUSEHOLD ACCOUNTS.—There are reasons why the wife or house-keeper should keep an account book. In the first place it would furnish interesting information of the number of pounds of sugar, spice, flour, meat, etc., that a family of a certain size consumes. How many know anything definite ahout these things! Again, such a record would suggest changes in the living in one way or another, and furnish a basis for calculation of the requirements for the coming year. We knew of a lady who went so far as to keep an account of the numher of extra meals which she furnished in a year; and when it was announced the family were greatly surprised. A household account is a startling revealer of facts. As a matter of family history, a record should he kept—of course, the dates of births and deaths will he given in the Record to be found in the family Bihle, hut there are other things that transpire in a family worthy of note.

RENDERING BOOTS WATER PROOF.—The snow and water of winter will get through the leather of most boots, and anything that will aid in making them impervious, is of importance. There are various compounds employed, one of the hest and oldest of which is made thus: A pint of Linseed Oil and 4 ounces Powdered Rosin are melted together with 8 ounces of Tallow, if of mutton all the better. They should he melted over a slow fire, and as the mixture cools stir while it is hardening. This preparation is to he applied to the hoots, melting it with a gentle heat, applying while still liquid, and ruhbing it in hefore the fire.

VACCINATION.—It is proper for us to call the attention of parents to this important operation, which should he performed upon every child. Vaccination is a simple matter, quickly done, hut nevertheless of such moment that it should he attended to at once, and thus ward off an attack of that dreadful disease—the small pox.

BAKED PORK AND BEANS.—A request comes from a Virginia house-keeper that we tell how the "Boston Baked Beans that are sold in the stores are prepared." We have had no experience with store haked beans, and do not know just how they are cooked, hut for the hest way to cook Pork and Beans in the New England style (we never could see the propriety of the prefix of Boston) we may help her. Do not expect to find it in a Cook Book; there are as many ways as there are hooks, and neither of them *the* way—which is our way. Beans, some; Pork, a piece, and a pot or pan hig enough to hold them are required. Pick over and wash the beans, cover them well with water, and let them soak all night, or longer. Place the beans in a pot or saucepan, cover with water, and heat slowly; when simmering shows an approach to hoiling, pour and drain off the water; cover again with hot water and hoil the heans slowly until doue. The pork, selecting a rather lean piece, is to he boiled in a separate vessel, while the heans are hoiling. When the heans are so soft that they crush readily hetween the fingers, place them in an iron or tin pan, or an earthen hean-pot; remove the rind from the pork; score the top of it hoth ways into half-inch squares, and press it into the beans, the top of it only exposed; put in the water in which the beans were boiled, more or less as they are wanted moist or dry; the quantity varying with the kind of heans, is to he learned only hy experience—nearly to the surface of the heans will answer for a first trial; put into the oven and bake slowly, at least 5 hours—6, or more, will do no harm. Variations which may be tried: A tablespoonful or two of molasses put in the pan with the beans gives a fine color and a flavor liked by most persons. Sprinkle a little pepper with the beans. Ordinarily the upper layer of beans will he browned, and often hard and parched; to prevent this, place slices of raw potato over the beans, but

not on the pork. Leave out the pork altogether, salting, and putting in a tablespoonful or two of beef drippings. Variations *not* commended: Boiling the beans without first soaking; boiling them without changing the water; boiling the pork with the beans; baking the pork without first boiling; using the pork with the rind on. In the days of brick ovens the bean-pot was put in towards night, and taken out the next morning. Those WERE pork and beans! At the present day such can only be found where the bake-pan and wood fires prevail, or in lumber camps. In either place the beans and pork are put into the bake-pan, and this completely covered with coals and ashes. Taken out in the morning! Talk about "Boston Baked Beans!"

The Uses of Apples.

However we may esteem other fruits, the apple is the main reliance in late winter or early spring, as there is little else in the way of fresh fruits. For cooking, no fruit is equal to the apple, which is susceptible of being served in a great variety of acceptable forms, some of which are here suggested.

APPLE SAUCE is the form in which the fruit most frequently appears. There is apple sauce, and apple sauce. To make the best, requires the best apples. Select high flavored fruit, such as the R. I. Greening, or Spitzenberg, pare, and slice in thick slices, and put, with the needed quantity of sugar, in a dish with a tight fitting cover. Some have a dish made for the purpose, but a tin pail with a good cover will answer. Set in a moderate oven, and allow it to stew slowly, until thoroughly done; good apples will need no water. Apple sauce so prepared, is far superior to that made in the usual way....Next in popularity to apple sauce is,

APPLE PIE.—Stewed apples half an inch thick, between two flabby crusts, is a caricature on apple pie. *The* apple pie is made with sliced raw apples, in a very deep plate, and as few plates are deep enough, the sliced apple should be heaped up in generous measure. It is a mistake to spoil good apples with much seasoning. Cloves and allspice overcome the natural flavor; a very little cinnamon, or minute bits of the dried peel of a sweet orange, develop it. In many families, sauce and pie end the changes, while they are really but the beginning of the list. What can be better for a dessert, than

BAKED APPLES.—Either sweet or sour? Many have a notion that sweet apples are the only kinds proper for baking. They are indeed excellent—when sour ones cannot be had.—But for the perfection of baked apples R. I. Greenings are required: Remove the centers with a "corer," fill the cavities with sugar, set in a baking dish with a little water, and bake rather briskly. Apples so treated, are better than most of us deserve; but if we add, as they are eaten, a liberal supply of Jersey cream! ....It is but a step from apples to

APPLE DUMPLINGS.—That person is not to be envied, whose recollections of childhood does not include apple dumplings—"such as mother used to make." That kind will never be found again, but a fair approach to it may be hoped for. Her's were both boiled and baked, and we never could tell which were best. Isn't the making of the crust for boiled dumplings a lost art? Well, we can manage baked ones, and there is less risk of failure, and consequent danger to the digestion.—"Both kinds of sauce if you please."

APPLE CUSTARD is not to be omitted. Pare and core the apples, stew in very little water until tender; pour over them a custard made in the usual manner, and bake until the custard is done. Housekeepers find it difficult to select a pudding-dish large enough for this.

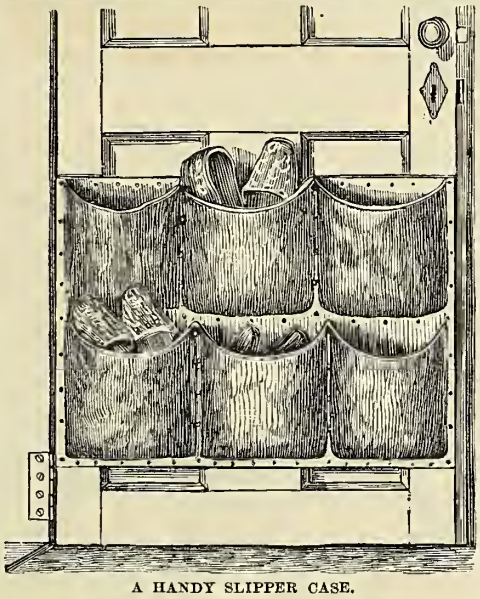
APPLE FRITTERS are much liked by many; Rather large slices of apples are sprinkled with sugar and cinnamon, allowed to lay for an hour or so; they are then dipped in a batter of flour and eggs, and fried in an abundance of very hot fat; for these, a wire frying basket is very convenient. They are drained for a few minutes, and served hot. If for dessert, they are dusted with powdered sugar when served, but if, as many prefer them, to be eaten with meat, the sugar is omitted.

BROWN BETTY.—We gave this several months ago, and will only briefly repeat. All the clean bits and fragments of bread are dried crisp in the stove oven with the door open, then rolled, and bread-crumbs are always at hand. Sliced apples, bread-crumbs, sugar, cinnamon, and a deep pudding dish. A layer of apples, sugar, spice, crumbs; apples, sugar, spice, crumbs, and so on until the dish is full. Bake.

PAN-DOWDY OR APPLE SLUMP.—Since wood-fires and the old bake-pan or skillet, with a cover to hold coals on the top, went out of fashion and use, an "apple slump" has not been possible. An imitation is made in a deep pan, and baked in an oven, but it is only a baked apple pudding. Probably the real thing can still be found in the lumber camps, and in the few other localities where wood is the fuel, and the open fire-place has not given way to the stove. The apples are quartered; the bake-pan is lined at the sides with a crust; apples are put in, packed solidly, some spice is used, and sufficient molasses, or part sugar, and part molasses, to sweeten; a top crust is put on, gashed to let the steam escape; the pan is set on the coals, and the coals put on the cover. Eaten hot with butter! Who can ever forget it! The side crust baked before the juice came from the apples; it then became partly penetrated with syrup; the apples were done to a rich crimson mass. Talk about apple meringues, and such flummery—Here was richness!

A Slipper Case.

Next to the comfort of slippers is the convenience of a place to put them when not in use. It, with some



A HANDY SLIPPER CASE.

persons, costs in trouble about all that the comfort is worth to find their slippers, they having been left where they were taken off, or thrown into a dark closet, to become buried beneath a host of other things. The engraving shows a case for holding slippers, light shoes, etc., that may be constructed of any heavy cloth and nailed to the inside of the closet door. A case thus made and located is always ready for use, always out of the way, and a great comfort to those who use it. As it takes but little time, skill, or money, to make such a handy receptacle, it is almost a wonder that there is not one in every house, not to say one on every closet door. Slippers are articles that are so apt to get astray unless they have a place, and always wanted when one is tired, that it is a pleasure to be able to put one's hands on them even in the dark; and all this may be gained by having a hanging case, like the one here given, and then using it.

Selecting Wall Paper.—It is getting the season of the year, when the house is to be cleaned, and very likely one or more of the rooms will need re-papering. The general aspect—feeling so to speak—of a room, depends so much upon the paper on its wall, that the work of selecting the paper is an important one. It is to some extent a matter of taste, but there are general rules of taste.

BOYS & GIRLS' COLUMNS.

The Doctor's Talks.

As boys in different parts of the country do not all have the same amusements, there may be some boys who will read this who have never amused themselves (and broken windows) by throwing stones with a sling. The way I used to make a sling was to get a piece of leather from an old boot-leg and cut it in the shape of a long oval—much like two eggs, with their large ends placed together, and about that size, or rather smaller. To each end of this leather, attach a strong twine or cord, two feet or more long. In one of these cords make a loop, and the sling is ready. To use it you need some smooth pebbles. Place the loop in one cord over the fingers of the right hand, hend the leather and place a stone in the center, hold both strings between the thumb and finger, and give the sling a rapid whirling motion. At just the right time, and when the sling is whirling rapidly, let go of the strings and off the stone will go to a great distance; the loop being around the fingers allows you to hold on to the sling. The skill consists in letting go the loose string just at the right time. When this is properly done the stone will be sent surprisingly far. As the sling was whirled with a rapid motion, the stone had a tendency to fly off, but it could not go while both strings were held, letting go one, off went the stone, the farther the more rapidly the sling was whirled. It is one of the laws of motion that a body moving in a curved or circular direction tends to go off in a straight line. The force which causes it to do this is called

Fig. 1.

THE CENTRIFUGAL FORCE,

a word which means to fly from the center. In the sling, the stone has a tendency to fly off, but it is held by the leather and can not go until you let go of the string. When you attach a ball to a string and whirl it about your head, you know very well what will happen if the string breaks. Illustrations of Centrifugal Force are seen when you set a grindstone to turning so rapidly that the water will fly from the surface, or when a fast driver on a muddy road spatters you with the mud that flies from the wheels of his carriage by this same force. If you whirl a parasol as the boy in figure 1 is doing, the same force will cause the ribs to fly apart and get as far from the handle as possible. A most important application of Centrifugal Force is seen in

THE GOVERNOR OF A STEAM-ENGINE,

the regular movement of the machinery being due to it. The manner in which this operates is shown by the little affair seen in figure 2, which is a round stick with two shorter sticks attached to it at one end by a bit of leather. If this be twirled in the fingers to give it a rapid rotating motion, the side pieces, or arms, will fly out, and if the motion is fast enough they will take a horizontal position. In the steam-engine the Governor consists of two rods with a heavy iron or brass ball at the end of each. They are so arranged that they will be moved by the motion of the engine, and are connected with a valve in the pipe, which supplies steam to the cylinder of the engine in such a manner that when they raise they will shut the valve and diminish the supply of steam, or if they fall below a certain point they will open it and give the engine more steam. When properly adjusted they will keep the engine at a steady, uniform speed. There are a

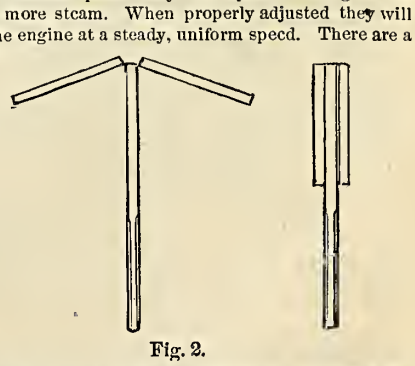


Fig. 2.

great many kinds of Governors in use, all having the revolving balls, but differ greatly in the manner in which the effect of their spreading by Centrifugal Force is applied to the machinery. You can illustrate another

APPLICATION OF CENTRIFUGAL FORCE

by attaching cords to a cup or basin, as shown in figure 3. It will be safer to use a tin vessel for this. Having ar-

ranged the strings, which may be easily done by putting a short cord or a wire around the dish, and attaching the

Fig. 3.

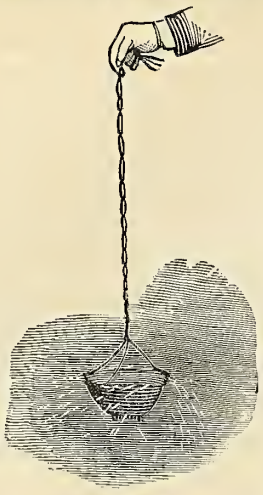


Fig. 4.

other cords to that; fill the cup with water, twist the strings together as in figure 4; hold up the cup and watch what takes place. As the cup revolves by the untwisting of the strings, the water, following the law of centrifugal force, will try to get as far from the center as possible; it will at first become hollow on the surface, and so soon as the motion is swift enough will be thrown over the rims to such a distance that may make it pleasanter to hang up the cup than to hold it. This tendency of water to fly off from bodies in motion is made use of in factories and bleacheries where they have large quantities of cloth and yarn to be dried; the wet materials are placed in a cylinder of wire gauze, which is made to revolve from 1,000 to 2,000 revolutions in a minute. In a very short time the water is all thrown out by centrifugal force, and the material is taken out quite dry. In a similar manner much of our

Fig. 5.

HONEY IS EXTRACTED FROM COMBS.

The best bee hives now have movable frames in which the bees build their combs. When the bees have filled their cells with honey, the frames of comb are taken out of the hive, and the caps of the cells being first cut away, are placed in an "extractor," where they are rapidly whirled; the honey is thrown out by centrifugal force, and the combs are returned to the hive for the bees to fill again. The same principle is made use of in draining molasses from sugar. An express or freight train moving with great speed

ON THE CURVES OF A RAILROAD

has a tendency to fly off by centrifugal force, and you will notice that an accident from that cause is guarded against by placing the outer rail on such curves some inches higher than the inner one. The statement that a pail or other vessel filled with water may be placed upside down without any of the water running out, seems at first quite improbable. It can easily be done, provided it does not remain in that position too long. As a pail would be too large for a boy to manage, you can do better with a tin kettle, or better still, with an old fruit can. It will be an easy matter to fasten a bail to a fruit can and a stout cord to that. Then, by care, the can quite full of water may be swung around so that the mouth will be directly downwards, as seen in figure 5, and not a drop will fall out. Success with this interesting experiment consists in

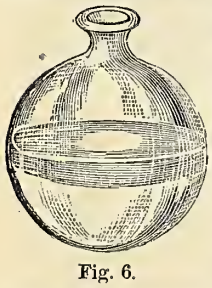


Fig. 6.

PROPERLY STARTING AND STOPPING.

You should first swing it back and forth like a pendulum, increasing the oscillations until by a skillful movement you can get a rotary motion. In this, the centrifugal force has such a tendency to carry the water off in a straight line that it overcomes the attraction of gravitation. I have seen the action of centrifugal force on liquids illustrated very prettily with a glass globe, in which a small quantity of water was placed, and colored dark-blue to make it more readily seen. This was attached to gearing, which would cause it to revolve rapidly, and it was very interesting to watch the movements of the water in the attempt to obey the centrifugal force and fly off, it of course being stopped by the glass. It gathered in a narrow band as far from the center as possible, and so long as the globe was in motion staid as a narrow band (fig. 6) against the glass. Some one has made a rather amusing calculation, which shows that if the earth revolved only 17 times faster than it does now, the centrifugal force would be sufficient to overcome the attraction of gravitation; if it went around on its axis in a little less than an hour and a half, instead of taking 24 hours, all movable things would fly off by centrifugal force, the water included; the seas would become dry, and the imagination can hardly picture the consequences. But it is hardly worth while to consider how things would be if they were not as they are. Such calculations do but little good. I doubt if it will make one happier or better to know that had the builders of the tower of Babel only carried their structure to the hight of 24,000 miles, the stones, or bricks, at the top would have all gone flying off by centrifugal force. THE DOCTOR.

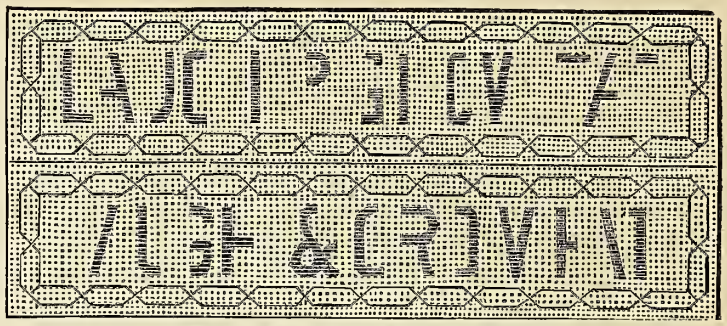


Fig. 1.—THE BRISTOL-BOARD PATTERN.

and a bird on the other, and strings attached as shown in figure 3. The trick being to put the bird in the cage. Again, a horse is put on one side of the card in a galloping attitude, figure 4, and the rider on the other, figure 5, when by whirling, as in the other cases, the two objects *appear* together as one picture, figure 6, because, as the juggler would say, "the hand is quicker than the eye."

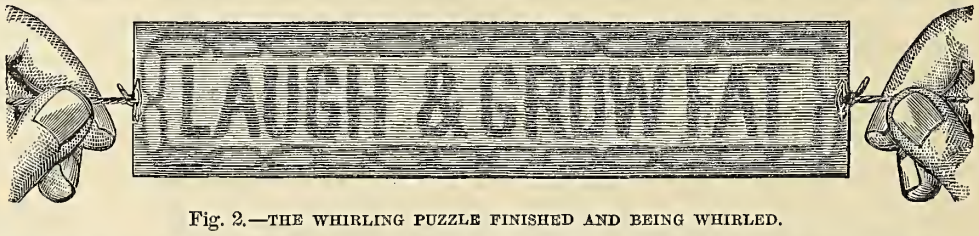


Fig. 2.—THE WHIRLING PUZZLE FINISHED AND BEING WHIRLED.

A Whirling Puzzle.

Perhaps you have done it many a time: if not, try it. Take a dry pine stick, and light one end of it; let it burn for a few minutes, blow out the flame, and a live coal will remain. Now hold this stick by the cool end, and move the other rapidly around in a circle; a bright ring of light is produced. This is due to the fact that the impression of the object upon the eye is not instantaneous, but remains for one-third of a second. During the short time of a third of a second the coal has passed through a considerable space, and therefore the

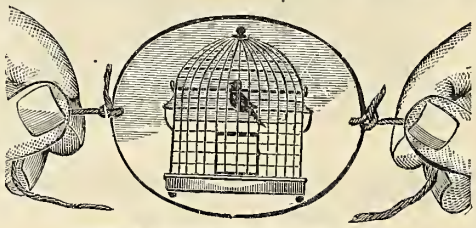


Fig. 3.—THE BIRD IN THE CAGE.

impressions in all its different positions are received and become blended into a line of light. This duration of the impression which an object makes has made many tricks, etc., possible, some of which are very puzzling until understood. Figure 1 represents a piece of Bristol board, upon which two rows of peculiar looking figures are worked in yarn. The pasteboard is afterwards folded lengthwise through the middle, so that the lines come upon the center of each side, facing outward. A string is then attached at the middle of each end, and with a binding to secure the two halves the puzzle is complete. When seen for the first time the *Thaumatrope* is an object entirely without meaning. It may be handed to a guest, with the request to read the inscription, as it was to the writer. The more it is turned this way and that way, the more puzzled and bewildered one becomes, until

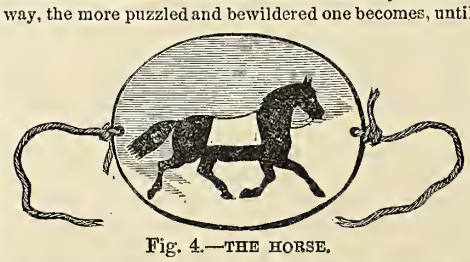


Fig. 4.—THE HORSE.

the strings at the ends are caught up and the thing is set in a whirl, when the reading—motto, request, or what not—comes out as clear as *daylight* to your own *delight*.

The same principle of *optics* (as this branch of science which treats of light and eye-sight is called) is shown in various other ways; one of the most common methods consists in taking a card, with a cage drawn on one side

As such puzzles are both curious and instructive, they are worthy of a little time in construction from the youngsters. It is not one of those things that only the ingenious can make, but is within the reach of any one who can find a piece of pasteboard and the picture of a horse, a boy to put on it, and a couple of short pieces of string. The more elaborate design, given in figures 1 and 2, is for the older of the girls, which they can easily make.

Our Puzzle-Box.

SCATTERED SQUARE.

(Find the first word [and initials] scattered in the first line of the following verse; the second word in the second line; the third word in the third line, and the fourth word in the fourth line.)

We love to play where brooklets run,
And violets open to the sun;
We love along the lanes to stray,
And cull the flowers by the way.

METAGRAM.

From a word of six letters, make all the words necessary to fill the following blanks. (*Example.*—Fill the following blanks from a word of five letters. Father——me eat my——and then go to——. The word is *bread* or *debar*, from which you may get *bade*, *bread* and *bed* with which to fill the blanks.) ——I—— —— —— the other evening I saw—— ——run across the floor. He had a piece of—— in his mouth. I could do nothing but——at him; but—— chased him down to the——on the——of the house. We are considered a pretty—— ——of folks, but it was a dark night, not a——to be seen; and although——"put on ——" and ran at a pretty good——, the——escaped.

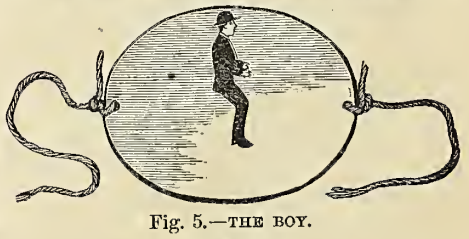


Fig. 5.—THE BOY.

CHARADE.

My first is rather personal,
Yourself it may be reckoned,
And thousands of my whole 'twould take
Ever to count my second. **A. S.**

CROSS-WORD.

My first is in number but not in one,
My next is in planet but not in sun,
My third is in mischief but not in play,
My fourth is in morning but not in day,
My fifth is in order but not in rule,
My sixth is in student but not in school,
My seventh is in sofa but not in bed,
My eighth is in scarlet but not in red,
My ninth is in shriek but not in yell,
My tenth is in prison but not in cell,
My eleventh is in onion but not in beet,
My twelfth is in mutton but not in meat,
My thirteenth is in wisdom but not in mind:
My whole is advice of an excellent kind.

BIBLICAL ENIGMA.

The whole, composed of forty letters, is good advice, from a good book.

The 1, 17, 13, 31, 6, 37, 24, 40, was a famous well, near Gerar.

The 11, 18, 8, 27, 21, 10, 6, 2, is a place where clothing is kept.

The 15, 29, 1, 7, 9, 22, 38, 30, was a Governor of Syria.

The 18, 3, 26, 12, 34, 36, 30, 19, was a precious stone in the high-priest's breast-plate.

The 30, 35, 15, 28, 5, 20, 8, 4, is a tree, common in Palestine.

The 32, 10, 38, 23, 33, 28, 2, 9, is a spring of water.

The 39, 25, 14, 18, 12, 22, 16, 28, was a city of Asia Minor.

Fig. 6.—THE BOY ON THE HORSE.

ANAGRAMS.

1. Light may cool.
2. For tin pieces.
3. Dire ration.
4. Iee funnels.
5. But a last sin.
6. Tea-urn fount.
7. E'en singer.
8. O I I bit Missie's lip.
9. Brighten any.
10. Fool's crime.

SYNCOPATIONS.

Five letters show, if placed aright,
What many a horse does in the light;
Abstract one letter, and you've got
A bond of union, break it not.
Again a letter take and see
A liquid used by you and me.
Once more, and if the lady's *that*,
Pray make your call, take off your bat.

CONCEALED ARTICLES WHICH MAY BE FOUND ON A FARM.

1. Give me a token, Nellie, by which to remember you.
2. George, has Pa decided to buy the mare?
3. The horse has lost a shoe.
4. Get Peter a key for his trunk.
5. The buds are swelling in the sunshine.
6. This hovel might as well be torn down.
7. Pa, I like maple sugar.
8. Ben, Charlie wants you.
9. John's tools are in the woodshed.

TRANSPOSITIONS.

(Fill the second blank with the same word which fills the first blank, transposed.)

1. I asked the——to——a piece off of one of his loaves.
2. My——could not——the temptation.
3. He won the——but he was——for life.

DOUBLE ACROSTIC.

The finals form the definition of the intials.

1. An edible.
2. Dark.
3. A town in Europe.
4. Part of a shield.
5. A director.
6. A European town.
7. A lake.
8. Small.

NIP.

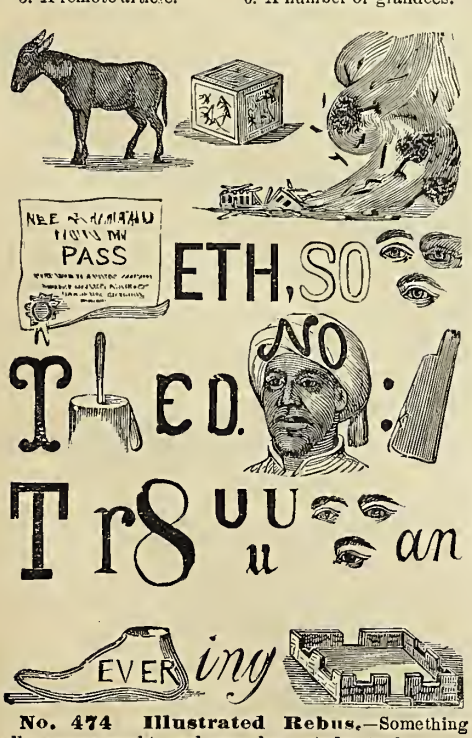
DROP-LETTER WORDS.

1. —m—r—s—n—e—t.
2. —a—c—o—e—t.
3. —o—s—e—n—t—o—.
4. —i—c—m—t—n—e.
5. —a—d—c—p—s.
6. —n—o—g—n—a—.

WORDS ENIGMATICALLY EXPRESSED.

(*Example.*—Man-of-war in a hurricane. *Nightingale* [Knight-in-gale].)

1. Cut our hair.
2. Part noun.
3. A remote article.
4. Benevolent color.
5. Furnish a century.
6. A number of grandees.



No. 474 Illustrated Rebus.—Something all persons ought, and may here study, to know.

BLANK ANAGRAMS.

(Transpose the italicised words in a sentence, into one word with which to fill the blank in the same sentence, and complete the sense. *Example.*—I want a cup of tea, and *Emily made it*——[immediately].)

1. Our——had to cross *a bridge.*
2. *Mamie's Ruth* suffers with——.
3. *Arlim nut oil* was used as an——.
4. *Old Gartia* was a Roman——.
5. *More shapes, Tom?* Well, I never saw such——.
6. *O! more bustle!* How very——.
7. *Even men do* sometimes speak with——tongues.
8. When we *got there* we found them——.

NUMERICAL ENIGMA.

I am composed of 10 letters:
My 3, 4, is a pronoun.
My 5, 9, 6, is another.
My 5, 1, 2, 7, is an animal.
My 6, 1, 8, 10, 5, is a very important household article.
My whole is a very useful study. B. F. O.

ANSWERS TO PUZZLES IN THE JANUARY NUMBER.

ADDED HEADS.—1. Imp—grimp 2. Rove—grove. 3. Edge—hedge. 4. Awl—bawl 5. Ear—bear. 6. Race—Grace.

STOREKEEPER'S PUZZLE.—PAY UP; first and last letter P, P (peas); 2d letter A (anaconda), 3d letter Y (*Your* initial); 4th letter U (U. S. Grant).

DOUBLE ACROSTIC.

Napoleon—Waterloo.

N— arro —W
A— ltoon —A
P— enobseo —T
O— b —E
L— ancaste —R
E— scuria —L
O— rinoc —O
N—ew Mex'c—O

CONCEALED BIRDS.—1. Linnet. 2. Wren. 3. Dove. 4. Heron. 5. Kite. 6. Owl. 7. Hen. 8. Crow. 9. Thrush.

ANAGRAMS.—1. Beforehand. 2. Subordinates. 3. Intemperance. 4. Biographical. 5. Inoffensive. 6. Incidental. 7. Deficient. 8. Obituaries. 9. Bituminous. 10. Cylindrical.

PI.—He who minds not his own business, is not fit to be trusted with other people's.

ALPHABETICAL ARITHMETIC.—7208)5631904(781. (*Key.*—Profitable.)

BIBLICAL NUMERICAL ENIGMA.—And let us not be weary in well doing.

The Pile of Winter Wood that was given in the January number proved to be of even greater interest to the young people than we anticipated. Answers from a number of boys and girls have been received with the correct and entire list. For the benefit of those who may have had some trouble, we give the list of woods in the pile. (1) Locust, (2) Fir, (3) Hemlock, (4) Elm, (5) Dogwood, (6) Beech, (7) Pine, (8) Willow, (9) Basswood, (10) Scrub-oak, (11) Birch, (12) Buckeye, (13) Cypress, (14) Walnut, (15) Maple, (16) Chestnut. With the list before you it will not be difficult to select the picture that represents each one of the kinds of wood mentioned above.

Answer to the Bean Puzzle.—The accompanying engraving makes the matter plain to all those who had trouble in putting in the four extra beans, and yet not increase the number of rows or number in each row. It will be observed, by referring to the January number, that there were two beans at each corner, while here there is only one. The corner beans are counted twice, and by removing one from each corner to the middle the count stands five for each row and allows an extra bean to be put in with the three already in the middle to make the six; the requirements of the problem are met, and what was once puzzling is now all clear.

This Is Leap Year—Why?

When the number of the year is divisible by four it is Leap Year, and such is the case with 1880. Just about the time, this, the March, number of the *American Agriculturist* reaches its readers, perhaps while thousands of boys and girls are looking over its pages, and even reading this very article, it will be the 29th of February—the Leap Year Day, that comes only once in four years. Nearly a year ago we saw a little girl then about three years old who had never had an anniversary of her birthday; but this year she will have one, and we hope it will be big enough to make up for all the misfortunes of being born on the 29th of the shortest month of the year.

"Leap Year," we have been told, "is an *odd* year;" but it has just been shown that it is altogether *even*. Why is it odd? we may ask, and the reply comes, "It is the year when the boys are girls and the girls are boys, and everything is turned around." O! yes, we begin to see! They have "leap year parties," and "leap year rides," and "leap year this and that," and the girls do the inviting, and driving, and managing, and many of the "company" things which the boys claim for their own on other and ordinary years. It is said that such matters are sometimes even carried so far that the young lady proposes to the young gentleman of her choice, and he has the privilege of accepting or refusing as he sees fit. Well! we will admit it is an *odd* year, though it is *even* all the same. But why do we have leap years? There must be some good reason for adding one day to every fourth year as it comes around to us. What is it?

The earth moves around the sun once a year, as you all have learned from your geography. The time required for the earth to pass around and return to the place from which it started is called a *solar* or sun year—the year made by the heavenly bodies. In olden times, men did not know that the earth moved around the sun. If there was any moving it was done by the sun they thought;

Fig. 1.—SLIDING.—(*See next page.*)

and it did *seem* to move. To this day we all say the sun *rises* and *sets*. Knowing so little about the revolution of the earth, it was very hard for men to arrange the divisions of time so that they would correspond with the *solar* year. The *civil* year is the one made by man, and, like many human things, it was at first very imperfect—that is, the *civil* year and *solar* year did not correspond very closely. In the time of Julius Cæsar, the two kinds of years had got so out of place that the spring of the civil year came in midsummer. To use an illustration, we will have two cog wheels that work into each other. If both wheels are in all respects alike, the same places will always come together at each revolution; but suppose one wheel is a trifle smaller than the other, the wheel representing the civil year smaller than the one of the solar year, then any points once together will keep getting farther apart. This was just the trouble between man's year and the natural year. Cæsar rearranged the civil year in 46 Before Christ, and introduced the system of having three years of 365 days and then one of 366—the additional day being given to February. The solar year is 365 days, 5 hours, 48 minutes and 49½ seconds, so that Cæsar's year of 365¼ days, averaging the four, is about 11 minutes too long. The point is to get these two years; the year of the heavens which we can not alter, and the year of the almanacs to agree. Matters went on as they had been started by Julius Cæsar, with a loss of 11 minutes a year until 1582, over sixteen hundred years, when it became evident that the little yearly loss was too great and must be remedied. How could this be done was the question. At this time a Pope took the matter up—it was a time when Popes had great temporal power—and decreed that the fifth of October be called the 15th, and all the intervening days to be cancelled. This only set matters right for the time being, but the same Pope, Gregory XIII, made it a rule that the *century years* not divisible by eight be not leap years. Thus 1700, 1800, and 1900 are not leap years, according to the new rule. This omits three leap years in every 400 years. With this arrangement the civil and solar years almost coincide,

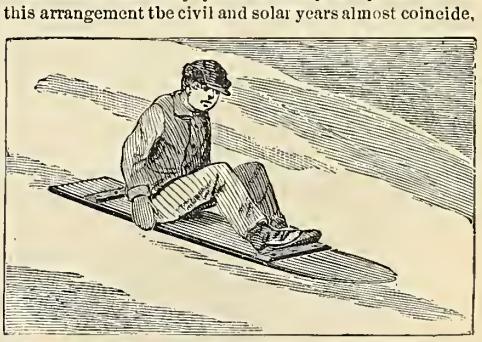


Fig. 2.—THE ROUNDED BOARD.—(*See next page.*)

the solar, exceeding by only 22¼ seconds, or a day in about 4,000 years—a matter too small to need attention.

Those who have followed us through, and we fear it has been rather dry for the younger readers, will see that it has been quite a hard matter to bring things around straight. The leap year comes from the fact that there is a fraction of a day in the solar year which it would not be convenient to have in the civil, so we put enough of the fractions together to make a day and have the extra one on the leap year, which comes every fourth year.

Fig. 8.—A COASTING SCENE.—DRAWN BY R. E. ROBINSON.—*Engraved for the American Agriculturist.*

Coasting.

It is as natural for a child to slide down a hill as for ducks to go into the water, or turtles to get on a log when the sun is shining, and get off very suddenly again when there are signs of danger. Boys, and girls too, try all summer to slide down something, if only a cellar door.

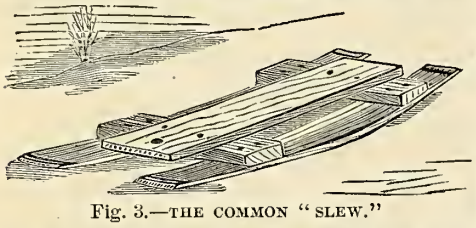


Fig. 3.—THE COMMON "SLEW."

But the old sloping cellar door has largely gone out of fashion, and with it has gone much juvenile fun; in the absence of the cellar door the youngsters take to something else, if only a dirty bank, and wear out their clothes, their mother's patience, and no small part of the bank itself, in their endeavors to have a slide. They will get a board and put it where there is some hope of a ride down its too often splintery surface; and getting their little wagon on it will go down with a shout and a smash.—Children are creatures of motion, and anything that makes motion easier is hailed with delight. Snow is just such an aid to the free movements of the child, and it is not necessary for me to say that it is the joy of their winter life. If a well boy can be kept in the house without considerable effort when the snow has come, and the rolling banks along the fences are crusted over with a coat as hard and smooth as ice, he is a different boy from any I ever saw or ever want to see. If the average boy can be kept from sliding down those crusted snow banks on his boots, as shown in fig. 1, p.109, some very strong measures have been used, or the boy was born in the tropics and he does not know what snow is for. The shoemaker

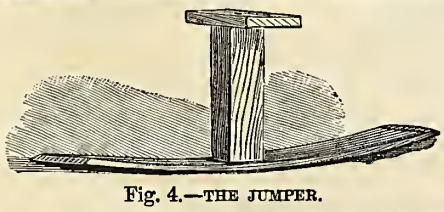


Fig. 4.—THE JUMPER.

does not want any such boys around. The desire to slide being born with the child, let us see some of the contrivances with which he accomplishes his purpose. In fig. 2, p. 109, is the simple, round-ended board, which may be of almost any length. A couple of cleats are nailed across it to serve the double purpose of keeping it from splitting and the rider from sliding off. There are certain objections to this coasting vehicle which those who have tried it will understand. If the snow is soft it does not go, but buries itself; and when the snow is hard and rough it is "rather uncertain."—Figure 3 is the "slew" made of two barrel staves set a few inches apart and fastened by cross-pieces with a strip of board upon these, running lengthwise of the staves, and making the seat. The "slew" is a low, broad runner sled, which will go either end foremost, and (when the hill is icy) sideways as well as any way; hence its name.—The *Jumper*, figure 4, is made of one stout stave, to which a bit of scantling one foot long is nailed, and upon the upper end of the scantling a board for a seat is fastened. This is not an easy thing to ride, as there is nothing to hold on to; and to a new hand, if the hill is steep, it is a *jumper* which will sometimes leave them behind. The *shovel* must come in somewhere, and let it be here, figure 5. This kind of coasting is not recommended, and many a child that has practised it remembers how much better it would have been for him if he had only left the shovel

Fig. 5.—COASTING ON A SHOVEL.

alone. The *Toboggan* is an Indian sled, and is much used by them in Canada for hauling their traps, pelts, etc., and also for coasting. It is made of ¼-inch stuff 5 to 8 feet long, bent up in front like the dash-board of a sleigh. It is braced by several cross pins, and kept in shape by cat-gut strings, as shown in figure 6.—The sled that I had the most sport with was made like the one shown in figure 7. The runners were cut from "natural crooks." The beams and knees all one piece, fastened to the runners by wooden pins passing through the rave, and fitting into half-rounded grooves on each side of the beams. This is probably the best sled for the farm, when it is often convenient to draw a heavy load. In coasting it has but few equals, especially if well shod. In the large picture, figure 8, the artist has given us "The old school house on the hill." It is doubtless the hour for noon recess, the day is a fine one, and all hands are out to make the most of it. Some are building a snow fort, or defending one already made, and others are skating on the pond to the right beyond; but the most of the children are having a good time with their sleds on the hillside in the foreground. There is the large sled with the two girls in front and the boy to guide it behind. The boy who will give the little ones—too small to go alone—a ride on his large sled is doing that which will be re-

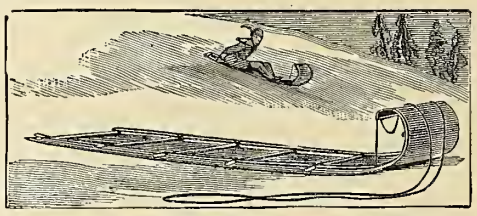


Fig. 6.—THE TOBOGGAN OR INDIAN SLED.

membered. Kind acts, like kind words, seem to live forever. Many boys prefer to have their sled all to themselves. There are such, no doubt, in the picture. Some of the boys sit upright and guide with their heels in front, while others prefer a horizontal position, and use the toes behind for steering. The older and more daring boys have fixed up a "Cajulluck" or "Thank ye marm," a bank thrown up in the course of the slide, so that when the sled strikes it the whole load is thrown into the air and comes down some distance beyond. It would seem that two boys have found the jumping a little serious, and they, and the sled too, have suffered from the toss into the air. One poor fellow has evidently hurt the back of his head, and is not getting as much sympathy from one of the other boys, who came through all right, as the conditions of the case demand. But there is another lad coming down at full speed, and if he does not look out he too will be piled upon and added to the wreck. What would these sports of childhood be without now and then an overthrow—a bruise and a break down! They are the sore spots for a while, but they become the

Fig. 7.

bright ones in the memory of younger days.—If there was no toiling up the hill in order to go down again—if there were no rough places to go over, and bad places to shun, this life would not teach us the grand lessons of personal responsibility and individual power—that it does now. We must remember the influence that "all work and no play"—and "all play and no work" had on our young friend Jack.—But there goes the school bell and the scene must change. The play out-of-doors must give place for the work that is within the school-room. The horse is anxious to go on, but not so with UNCLE HAL.

Alum in Our Bread.

A Chemical Examination of Baking Powders and its Results—The Use of Alum and its Deleterious Effects—Opinions of Medical Experts—Prompt Action of the New York and Brooklyn Boards of Health, etc.

The *N. Y. Evening Post* bas been giving this subject some attention, and has published the result of some remarkable investigations, which are worthy the close attention of tboughtful people. From its recent exposure of the nse of *burnt alum* in some hrands of haking powders, in place of cream of tartar, the following extracts are mainly taken:—Pursuing the investigation of the qnality of the food sold in tbis clty, the representative of the *Evening Post* took np haking powder as one of the articles in most general nse in onr honseholds. It is nsed by nearly every family in the city, and it is naturally of great importance to tbose who eat the food made with it to know whether it contains anything injurious to health.

There are certain constituents of good baking powder which may be regarded as entirely free from danger. They consist of pure grape cream of tartar, bicarbonate of soda, and carbonate of ammonia. The cream of tartar nnites with the otber two ingredients, and carbonic acid gas is tbrown off, producing the same effect as yeast in a mnch shorter time. It has been fonnd, however, that alum will also unite with the other two articles, and carbonic acid gas will he produced. As alnm costs less than three cents, while cream of tartar costs more than tbirty cents a pound, it is easy to see why alum is snbstituted for the latter hy some haking powder mannfacturers.

The *Evening Post's* representative obtained the following expressions of opinion as to its effect when alnm is used in haking powder, from some physicians of New York of the highest reputation and ability: Dr. William A. Hammond, formerly Surgeon-General United States, of No. 43 West Fifty-fonrth street, expressed himself as perfectly certain of the injurious effects of alum, whether nsed alone to whiten hread, or as an adulterant of haking powder. "The hydrate of alnmina," Dr. Hammond said, "wonld certainly he injurious to the mncons membrane. It would inevitably tend to constipate the howels and interfere with digestion; and anything that tends to render the albumen of the bread insoluble, and therefore takes away from its nutritive valne, is injurious."

Dr. Sayre, former President of the Board of Health, said to one of the representatives of the New York press: "After the experiments in this line hy Liehig and other distinguished chemists, and vivisectors with alum on cats, dogs, and other animals, with the published results, we may well ask what is tbe use of snch experiments if we do not apply them to practice in the preservation of human life and health? The Board of Health should see to this." Dr. Waller, Chemist for the New York Board of Health, when asked hy a *Sun* reporter as to the injurions effects of alnm, replied: "You know what the effect of alum is when you take some of it in your mouth; well, tbat is jnst the effect it has upon the coats of the stomach."—The analysis of the varions haking powders, as officially reported by the Brooklyn Board, reveals only two hrands containing alum being sold in that city—Patapsco and Dooley's. As to the cream of tartar powders, the same report mentions the Royal Baking Powder as free from alum or any other injnrious snbstance. There are probably more than five hundred kinds of haking powder mannfactured in this conntry. Through Dr. Henry A. Mott, the well-known chemist, one of tbe most competent, trustworthy, and careful experts of this country, the following analyses were obtained, showing the presence of alnm in large qnantities in many of the haking powders having a wide sale. Dr. Mott kindly furnished not only the results of his own analyses, hut also those of several chemists of high professional standing, inclnding Professor Henry Morton, President Stevens Institnte of Technology; Professor R. W. Schedler; Dr. Stillwell, analytical chemist, this city.

Dr. Mott's report is as follows:

Dear Sir:—In accordance with your request, I herewith embody the results of tbe analysis of haking powders procured during the past three months, in all of which alnm was fonnd as an ingredient:

"PATAPSCO,".....Contains Alum
(Smith, Hanway & Co., Baltimore, Md.)
"DOOLEY'S.".....Contains Alum
(Dooley & Brother, New York.)
"CHARM,".....Contains Alnm
(Rohrer, Christian & Co., St. Lonis.)
ANDREWS' "REGAL,".....Contains Alum
(C. E. Andrews & Co., Milwaukee.)
"QUEEN,".....Contains Alum
(Bennett & Sloan, New Haven, Ct.)
"VIENNA,".....Contains Alum
(Church & Co., New York City.)
"ORIENT,".....Contains Alum
(Cronse, Walworth & Co., Syracnse, N. Y.)
"AMAZON.".....Contains Alnm
(Erskine & Erskine, Lonisville, Ky.)
"GILLETT'S,".....Contains Alnm
(Gillet, McCulloch & Co., Chicago.)
"TWIN SISTERS,".....Contains Alum
(Union Chemical Works, Chicago, Ill.)
"INVINCIBLE,".....Contains Alum
(Snyder Brothers & Co., Cincinnati.)
"KING,".....Contains Alnm
"WHITE LILY,".....Contains Alum
(Jewett & Sherman Co., Milwaukee, Wis.)
"MONARCH,".....Contains Alum
(Ricker, Crombie & Co., Milwaukee, Wis.)
"ONE SPOON,".....Contains Alum
(Taylor Manufactnring Co., St. Lonis, Mo.)
"IMPERIAL,".....Contains Alnm
(Spragne, Warner & Griswold, Chicago.)
"HONEST,".....Contains Alum
(Schoch & Wechsler, St. Paul, Minn.)
"ECONOMICAL,".....Contains Alum
(Spencer Brothers & Co., Chicago, Ill.)
"EXCELSIOR,".....Contains Alum
(L. E. Taylor, Chicago, Ill.)
"CHARTRES,".....Contains Alum
(Thomson & Taylor, Chicago.)
"GRANT'S,".....Contains Alum
(J. C. Grant, Philadelphia.)
"GIANT,".....Contains Alum
(W. F. McLaughlin, Chicago.)
"QUEEN,".....Contains Alum
(Star Chemical Works, Chicago.)
"PEERLESS,".....Contains Alum
(Marden's, Rochester, New York.)
"ZIETLOW'S" SUPERLATIVE.....Contains Alum
(New York.)
"RISING SUN,".....Contains Alum
(C. O. Strutz & Co., Chicago.)
"SIBLEY, DUDLEY & CO.'S,".....Contains Alnm
(Chicago.)
"LAKESIDE,".....Contains Alum
(C. O. Perrine, Chicago.)
"FRENCH,".....Contains Alum
(Thomson & Taylor, Chicago.)
"DONNOLLY & CO.'S,".....Contains Alum
Preminm Ycast Powder, (San Francisco).
"CHAMPAGNE,".....Contains Alum
(J. S. Taylor & Co., San Francisco.)

Yours, very truly,
HENRY A. MOTT, Jr., Ph. D., E. M.

New York, Jan. 5, 1879.

Having obtained the foregoing, the reporter called at the office of the Royal Baking Powder Company, No. 171 Dnane street, the manufacturers of the Royal Baking Powder, a hrand which the report of the Brooklyn Health Board revealed to he pure. Mr. J. C. Hoagland, President of the Company, gave the following replies:

REPORTER—"What is the cause of the present excitement about haking powders?"

Mr. HOAGLAND—"It is due to the substitution of alnm for cream of tartar hy some mannfactnrers."

REPORTER—"Have you ever used any alum in the Royal Baking Powder?"

Mr. HOAGLAND—"No, sir."

REPORTER—"But I find that it is used hy others. What is it used for?"

Mr. HOAGLAND—"I presume because it is cheaper than cream of tartar, which it replaces."

REPORTER—"You would, therefore, obtain a larger profit by using alum than by using cream of tartar?"

Mr. HOAGLAND—"Yes, for a time snch substitntion wonld more than double our profits."

REPORTER—"Why, then, do you not use it?"

Mr. HOAGLAND—"For two reasons: first, the anthorities on this point are so positive and conclusive that the continued nse of alum in this way is dangerous to health, that we could not conscientiously nse it; if others choose to take risks on the public health, we shall not follow them, preferring to continue the nse of pnre grape cream of tartar, which is demonstrated to be wholesome; second, our experience during twenty years has satisfied us that that which is best for the public is best for ns. We can not afford to peril the reputation of the Royal Baking Powder."

REPORTER—"Can you give me any information in regard to cream of tartar, how and where you procure it?"

Mr. HOAGLAND—"Certainly! There are several snbstitutes or patent 'cream of tartars' on the market, made principally from terra alba or hurnt hones, the latter heing treated with strong corrosive acids, hnt the cream of tartar we use is a fruit acid—it exists natnrally in the Grape—and during fermentation of the tart wines in France, it is deposited on the sides and bottom of the casks. In its unrefined state it is called crnde tartar or argols, and is taken from the cask after the wine has been drawn off. Each farmer has his crop of it according to the amount of wine he has produced. This company is the largest user of cream of tartar in the world, and we have our agents in various parts of Europe collecting the crnde material. It is imported into this country as argols, and then subjected to a higher process of refining, by which it is purified especially for our pnrposes, forming pure white crystals, which we grind to powder, and in this form we use it as an ingredient of onr Baking Powder."

Other interviews were had, all to the same general effect, namely, that alum is nsed by many mannfactnrers to cheapen their powder, and enable them to undersell their competitors. Many of them are probably ignorant of the evil effects of alum on the system, while others are indifferent so long as they make money, and no one can he said to have dropped dead from taking their powder.

By this exposure of the injurious effects of alum in Baking Powder, the public must not be frightened from using baking powders when properly made. In the report of Professor Elwyn Waller, Assistant Health Inspector of New York Board of Health, on Baking Powder in 1872, the public are recommended to purchase one of the well-known brands of haking powder, in preference to purchasing the cream of tartar separately, as this snbstance was found in all cases to he adulterated. The inspector further states that when the mixture is made on a larger scale in a factory, and the haking powder is put up in packages ready for use, the mannfacturer experiences no difficulty in securing good materials free from adnlteration.

Dr. Mott, the Government chemist, in his review of the snbject in the *Scientific American*, makes special mention of having analyzed the Royal Baking Powder, and fonnd it composed of wholesome materials. He also advises the public to avoid purchasing haking powders as sold loose or in hulk, as he found by analyses of many samples that the worst adulterations are practised in tbis form. The label and trade-mark of a well known and responsible manufacturer, he adds, is the best protection the public can have.—HARPER'S WEEKLY.

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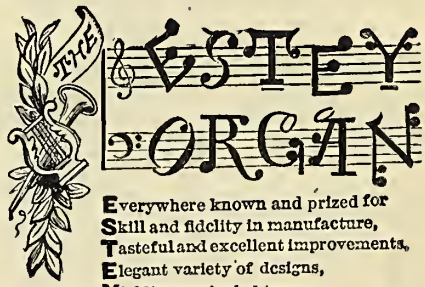

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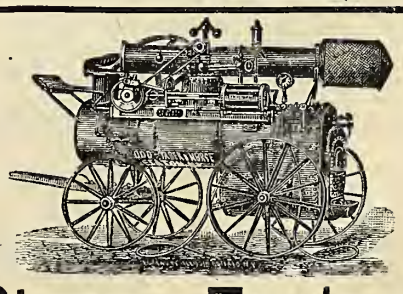

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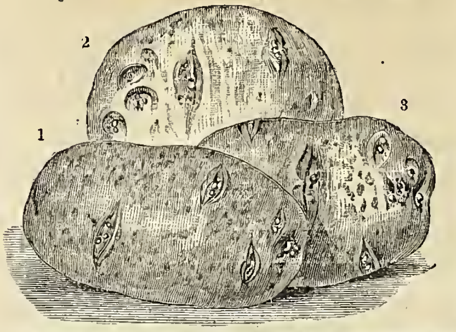

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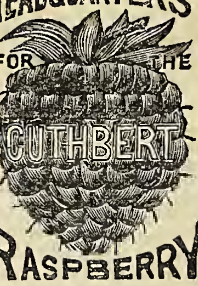

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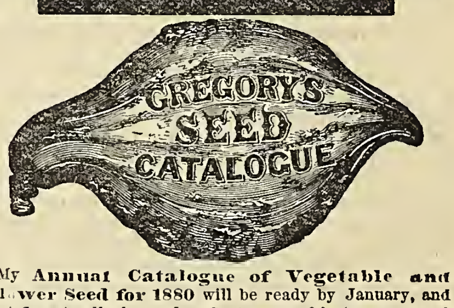

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Best sorts, imported direct via San Francisco, in original clay. If you are interested in *Lilies* or other *bulbs,* write to J. C. VAUGHAN, 45 La Salle St., Chicago, Ill.

The New Potato "CHICAGO MARKET."

A BEAUTIFUL NEW SEEDLING GRAPE—the **Beauty of Minnesota**—the best of all grapes known. Some fruit on hand yet. Send for Circular. Address JOHN C. KRAMER, La Crescent, Houston Co., Minn.

Send for New Pamphlet (1880) containing Results with Practical Growers.

THE MAPES COMPLETE MANURES FOR EACH CROP.

A few Reports (Extracts) from well known Potato-Growers and Farmers in the Use, during the past Season, of the MAPES POTATO MANURE.

MESSRS. TEN EYCK BROS., Truck Growers, etc., Matawan, N. J., report Nov. 1, 1879: "Yield on eight acres nearly 1,600 bushels of potatoes. No acre fell below 180 bushels per acre, while some parts of the field did not fall short of 240 bushels per acre—95 per cent marketable. Land was in poor heart. The yield of the rows left unfertilized was too poor to be considered of any market value; the difference was so great as to make it difficult to state the degree. The season might be called a good average one, until the heavy rains that occurred in August, which seemed to have a killing effect on the vines of the earlier sorts. A marked difference of **more than two weeks** were unexpectedly seen in the **early** maturing effects of these fertilizers, over a good dressing of coarse yard manure, which was clearly proved on a separate piece, planted with the same variety of potatoes, and the yield one to *four* in favor of the special manures, and of *far better quality.*

"Having had an experience of over thirty years in this line of business, we are firmly convinced that better paying results will follow the judicious use of your Concentrated Manures for farming crops, than in the use of the stable manures of the cities, at such prices as they seem to command."

"The cost of these potatoes, grown as above, for the manure, including freight, cartage, and spreading, was **twenty-three cents a barrel**, or about **eight cents a bushel.** If there be a purchasable manure that will reduce that cost under like circumstances, we should like to learn what it is, and where it can be had."

MESSRS. E. & J. C. WILLIAMS, Nurserymen, Montclair, N. J., state in their last issued catalogue that they grew during the past season from a single barrel of their "Late Rose Potatoes," 210 bushels with the Mapes Potato Manure.

MR. JOHN T. LOVETT, Vice-Pres. "American Association," writes, Jan., 1880: "I had startling results from the use of the Mapes Potato Manure the past season on poor light land. Had finer potatoes, and more of them, than my neighbors who paid *four times* as much money for stable-manure."

MR. FREDERICK MORTON, Rocky Hill, Conn., reports, Oct. 21st, 1879: "On very poor soil, natural yield only 25 bushels per acre, grew 200 bushels potatoes per acre with 600 lbs. of the Mapes Potato Manure. The potatoes grown with your manure were all of **two weeks earlier** than those grown with stable-manure (10 cords applied per acre)."

MESSRS. W. B. & O. C. KNAPP, farmers, Round Hill, Fairfield Co., Conn., report, Dec. 15, 1879: "Think the Mapes Potato Manure worth its cost in *keeping the worms* from eating the crop. 400 lbs. per acre, broadcasted and harrowed in, produced a much larger yield than grown with either barn-yard manure or compost of ben-manure, ashes, and plaster."

MR. S. D. BURROWS, Basking Ridge, N. J., writes, Dec. 23d, 1879: "One handful, scattered in each hill at time of planting, yield was equal to a heavy coat of yard-manure with wood-ashes."

MR. W. T. PARKER, Little Silver, N. J., writes, Oct. 24th, 1879: "The Mapes Potato Manure used at the rate of about 400 lbs. per acre, alongside of 25 tons of compost to the acre, costing $30 without adding cost of handling. Saw but little difference in the crop. Used the same rate (money value) of the Mapes Manure as compared to the compost, and it nearly *doubled* the crop."

MR. ANDREW N. DEBAUN, Oradell, Bergen Co., N. J., writes, Dec. 22d, 1879: "The Mapes Potato Manure has made a grand impression in this section. The potatoes generally looked poorly in all cases without the fertilizer. Barn-yard manure did not seem to tell in the early part of the season, and the dry weather we had was likely to affect those most that were late in maturing. Had 260 bushels per acre Early Rose Potatoes with the Mapes Manure. 126 bushels per acre on natural soil. My Clawson Wheat grown with the Mapes Complete Manure ("A" Brand) took the first premium at our County Fair."

MR. A. P. WAKEMAN, Fairfield, Conn., writes, Dec. 16th, 1879: "Potatoes grown with the Mapes Potato Manure were large, smooth, with very fine flavor. **They did not rot,** while in the same field, side by side, where I used well rotted manure, at the rate of 15 two-horse loads per acre, with plaster in the hill, **they rotted quite badly.**

MR. LEWIS BEACH, New Castle, New York, reports, Nov. 16th, 1879: "Soil gravelly and high; corn stubble; yield from natural soil, 140 bushels; with barn-yard manure, 180 bushels; with same quantity of barn-yard manure, and 400 lbs. of the Mapes Complete Manure, 284 bushels per acre. The potatoes grown with the Complete Manure were of superior quality and size. They received the First Premium at the Agricultural Fair at Yorktown. The Potato Manure prevented the grubs from depredating, and increased the crop fully **fifty per cent** above the yard-manure alone.

MR. JOSEPH CORY, Westfield, N. J., reports Dec. 9th, 1879: "Yield of Early Rose greater from an application of 800 lbs. of the Mapes Potato Manure (costing $20) than from **thirty-nine** loads of stable-manure at **two dollars per load**—total, $78. 400 lbs. of Mapes' Beet and Mangold Manure per acre **broadcast** yielded 1,020 bushels beets per acre. 40 loads stable-manure yielded 840 bushels per acre, and the natural soil 437 bushels per acre."

Some other Crops grown with the MAPES MANURES past Season.

450 BARRELS CAULIFLOWER from 1¼ acres—and 225 bushels potatoes per acre.—JOHN CAMPBELL, Cutchogue, Suffolk Co., N. Y.

500 BUSHELS ONIONS per acre—350 bushels with stable manure, and 250 bushels per acre on natural soil.—F. W. PUGSLEY, Poughkeepsie, N. Y.

"600 BUSHELS PER ACRE of as nice onions as ever grew."—"One bushel of the White Onions took the **First Premium** at the Norwalk Fair. It would have been useless to have tried to get **half a crop** without the Mapes Onion Manure" (Complete Manure for light soils.)—CHARLES A. MEEKER, Southport, Conn.

"This is the first special manure I ever used that grew a crop of onions equal with **hen manure.**"—A. N. HOUSE, Chester, N. Y.

105 BUSHELS WHEAT from 3½ acres; 200 bushels potatoes per acre on light soil; Turnips far superior in size and quality to those raised with barn-yard manure.—HENRY C. HERRING, Spring Valley, N. J.

FIVE PREMIUM CROPS OF ASPARAGUS grown during the past three seasons at Oyster Bay, exhibited at Spring Exhibitions in Mineola, L. I., were raised with the MAPES ASPARAGUS MANURE. Successful competitors were VALENTINE FROST, Locust Valley, L. I., and GEORGE H. TOWNSEND, Glenhead, L. I.

44 BUSHELS BARLEY per acre on heavy loam.—J. LAWRENCE SANFORD, Southampton, Suffolk Co., N. Y.

PREMIUM POTATOES "grown with the Mapes Manure—Queens Co. Agricultural Society, Town of Oyster Bay."—RICHARD C. COLYER, Woodbury, L. I.

PREMIUM POTATOES, "Best Early Rose," grown with the Mapes Manure—Agricultural Fair at Mineola, L. I.—T. CARLL BAYLIS, Mineola, L. I.

PREMIUM ROSES, Sweet Williams, etc., grown with the Mapes Manure—Queens Co. Agricultural Fair, Mineola, L. I.—WM. A. BURGESS (Dosoris), Glencove, L. I.

TWELVE Medals and Awards given to the Mapes Manures by the State Agricultural Societies and Institutions in Connecticut, New Jersey, and New York States during the past two years.

Quick Action and LASTING EFFECT of the Mapes' Manures.

A second year's experience with artificial fertilizers confirms my previous opinion of their value. As a help to fill out the supply of manure, of which no good farmer yet ever had enough, they are invaluable and indispensable. The great advantage is their quick action; 300 pounds per acre of **Mapes' Complete Manure** ("A" brand), spread over a field of Oats, was rained upon at night when the work was but half finished. Before the next evening the part first covered was conspicuously greener than the other part, showing that in the 24 hours the effect of the fertilizer was already in action. The permanence of these fertilizers has been much questioned; but there seems to be no doubt of it. One of my fields of fodder rye, which was in potatoes in 1878, and was then dressed with no manure but the **Mapes' Potato Manure** at the rate of 600 pounds per acre, was put in rye the same fall; the rye was cut for fodder the next spring, and the land was sown to Hungarian grass. Both these crops were unusually good. A part of the rye was cut twice, and a part, left for seed, produced good plump grain. The field is sown to rye again, without any manure or fertilizer, and looks remarkably well, and quite equal to another field on which 20 loads per acre of rich cow manure was spread. The effects of the fertilizer are *clearly not exhausted by* THREE *crops, and show favorably on the* FOURTH.

"HENRY STEWART, Westwood, Bergen Co., N. J., Dec., 1879."

"In the spring of 1877 we top-dressed with Mapes' Spring Top-Dressing at the rate of 500 lbs. per acre, a field of wheat of 12 acres, that had been winter killed. Some of our neighbors assured us there could not be *a bushel* to the acre, so apparently completely was the wheat destroyed. At harvest we cut a better crop than seemed possible, and the grass showed good. On threshing there was over 12 bushels to the acre, but we looked for our profit in the grass, in the summer of **1878** we cut an excellent crop of grass, but the crop of **1879 was even better,** showing the PERMANENCE of your manures. Crossing the fence to a field adjoining, owned by one of the best farmers in the town of Oyster Bay, may be seen grass laid down at same time with the customary costly dressing of New York stable manure—presenting a striking contrast—it is full of weeds, and the grass is thin and weak, whilst our grass is **clean, thick, and strong.**

"C. W. CARPENTER, Locust Valley, L. I."

These Manures are all READY-MIXED, in FINE, DRY condition, and EASY OF APPLICATION.—Full Directions for use and all information required for their use accompany EVERY PACKAGE. These Manures have been repeatedly subjected to Analytical Test by the leading Chemists and State Inspectors at the Stations—and IN NO INSTANCE HAS THE STRENGTH OF ANY ONE OF THESE MANURES BEEN FOUND TO BE BELOW THE STANDARD, fully given, in percentages, on each tag. Send for New Pamphlet (1880). Address

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Experiment Set "A," $7.00.—"Complete Manure" Experiment Set, $5.00. Descriptive Pamphlet, "Farm Experiments," prepared by Prof. W. O. Atwater, and Blanks for Reporting Experiments, enclosed with each Set "A."

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100 Varieties selected Fruits, Fruit Plants, and Fruit Trees, grown for transplanting and fruit for the market. Catalogue free. J. S. COLLINS, Moorestown, N. J.

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Admitted by leading Seedsmen and Market Gardeners everywhere to be the most perfect and reliable drill in use. Send for circular. Manufactured only by

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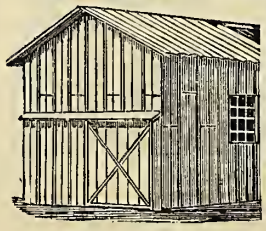

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Combined Catalogue of

SEEDS AND PLANTS

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QUEEN of the MARKET

the largest and best.

2,000,000 *Sharpless Strawberries.* **1,000,000** *Miner's Great Prolific.* 10 acres other *choice varieties.* 2,625 bushels Berries grown at **Pomona Nursery** in 1879. A new race of Peas. **Kieffer's Hybrid, Blight-Proof:** *hardy and productive,* bears early, fruit large, and **of good quality.** ☞ Send for Catalogues **free.**

WM. PARRY,
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E. P. ROE has the largest and finest stock in the country of this unequalled market Raspberry. The wide and varied test of the past season proves it to be the **finest,** largest, hardiest, bright red raspberry before the public. A third larger and twice as productive as the Brandywine, and so remarkably firm that it can be shipped by rail to market. It has yielded at the rate of $800 per acre. For portrait see April No. of "Scribner's Magazine." Catalogue free. Address

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Strawberry Plants	Either kind	**Raspberry Plants**
50 Sharpless	*postpaid*	15 Cuthbert (Red)
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100 Chas. Downings.	Descriptive	**Blackberry Pl'nts**
GRAPE VINES.	Catalogue	35 Kittatinny
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12 Hartford Prolific	*The Dollar*	35 Dorchester
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600,000 **PLANTS BY MAIL!** *A Nursery at your door.* Best **new** Raspberry and Strawberry Plants. *Early Prolific, Reliance, Cuthbert, Queen of the Market, Thwack* (red), *Florence* (yellow), *Gregg* (black), **50c.** a dozen. *Sharpless, Miner's G. P., Glendale, Cinderella, Duchesse, Continental, Crescent, Monarch, Pioneer, Seth Boyden, Forest Rose,* **30c.** a dozen. Purity and genuineness of plants and safe arrival guaranteed. Send for a descriptive circular and list of lowest wholesale prices. Address

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1,000,000 **SHARPLESS Strawberry Plants,** Noted for *Great Vigor, Productiveness, Large Size, and Best Quality for Market and Family Use.* Get Plants direct from Central Pennsylvania, "the home of the Sharpless," and be sure they are genuine. Descriptive Catalogues free.

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STRAWBERRY PLANTS—Pure, Well Grown, Packed free. Charles Downing, Crescent Seedling, Wilson Albany, Captain Jack, Kentucky, and Monarch of the West, at $1.50 per 1,000. Boyden No. 30, Champion, Cumberland, Triumph, and Cinderella, at $2.50 per 1,000. Miner's Prolific, $3 per 1,000. Sharpless, $8 per 1,000. For prices of 40 other sorts, or for large lots, see Catalogue or write for special rates. Please Address **J. S. COLLINS, Moorestown, N. J.**

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WILLIAM H. MOON, *Morrisville, Pa.*

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THE CRYSTAL CITY STRAWBERRY is undoubtedly the earliest variety known. It proved itself the earliest last spring, by being in the market several days before any other strawberry from any part of the State. Send for Circular and Price List to

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Thousands of Cuthbert Raspberry were planted in Rockland and Bergen Counties before it was advertised. Plants and root-cuttings for sale. Catalogue free. Prices low. Rockland Co. Nurseries, A. T. BLAUVELT & CO., Blauveltville, N. Y.

30 Acres Big Berries. Currants, Grapes, etc. 100 best sorts. Plants by mail or express. See our prices before buying of others. Illustrated Catalogue free. G. H. & J. H. HALE, So. Glastonbury, Conn.

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☞ *Our Asbestos Liquid White has been adopted for interior and exterior work of the U. S. Capitol at Washington.*

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ASBESTOS ROOF PAINT.—Brown, Red, Yellow, Gray, Slate, and Cream, for tin and shingle roofs, iron work, agricultural implements, fences, outbuildings, etc. *We guarantee this to be a better article than has ever before been offered to the public for similar purposes.*

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ROSES Over 200 Varieties, all labeled, postpaid. *Greenhouse* and *Bedding Plants, Hardy Shrubbery, Seeds,* etc., by mail. Catalogue free. J. T. PHILLIPS, West Grove, Chester Co., Pa.

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SPLENDID FLOWERS OVER **1200** Distinct Varieties

All **Strong Plants,** each labeled, delivered safely by mail. **Largest assortment. Low prices.** In business for **26 years.** *Guarantee satisfaction.* Stock comprises *all desirable varieties.* Only mature plants sent. Our new **Illustrated Hand-Book,** sent free, contains the name and description of each plant, with instructions for **successful** cultivation. *Do not purchase plants* **elsewhere** *before sending for our new* **HAND-BOOK** Every lover of *flowers* should have it. All buyers of *cheap plants* should have it. Every one wanting *new* and *choice plants* should send for our *Hand-Book.* HOOPES, BROTHER & THOMAS, CHERRY HILL NURSERIES, West Chester, Pa.

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100 by express for $5. 50 by mail, $3.
Samples, 14 for $1.10. Lists free.

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NEW HARDY PLANTS

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SMALL FRUIT PLANTS,

Seed Potatoes, etc. Circular free.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from Page 90.

In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations are seldom repeated, as those who desire information on a particular subject can cheaply obtain one or more of the back numbers containing what is wanted.

Back numbers of the "American Agriculturist," containing articles referred to in the "Basket" or elsewhere, can always be supplied and sent post-paid for 15 cts. each, or $1.50 per volume.

The German Edition.—All the principal articles and engravings that appear in the *American Agriculturist* are reproduced in the German Edition. Besides these, there is a special department, edited by an eminent German cultivator. Our friends can do us a good service by calling the attention of their German neighbors and friends to the fact that they can have the paper in their own language, and those who employ Germans will find this Journal a most useful and acceptable present.

Bound Copies of volume 38, and of every previous volume back to Vol. XVI. (1857), neatly bound, with gilt backs, Index, etc., are supplied at $2 each (or $2.30 if to be sent by mail). See Publishers' Notes, 2d cover page.

Clubs can at any time be increased by remitting for each addition, the price paid by the original members; or a small club may be made a larger one at reduced rates, thus: One having sent 6 subscribers and $7, may afterwards send 4 names more and $3, making 10 subscribers for $10.00; and so for the various other club rates.

Terms to New South Wales, New Zealand, Australia, Africa, etc.—To several inquirers. Under the latest revision of the Postal Union Regulations the price of the *American Agriculturist* (either English or German edition), including postage *prepaid* through, will be covered by 7 shillings sterling per annum. This applies to the above countries, and to all others embraced in the General Postal Union. The simplest mode of remittance is by Postal Money Orders, payable in London, to the order of Orange Judd Company. These can be readily cashed in N. Y. City at a slight discount, which the publishers will cheerfully pay. For Club rates, (postage included), see our second cover page, and reckon 22 cents to the shilling sterling.

Fish as Fertilizer.—"J. C. D.," Richmond, Va. The fish known as Menhaden, or Moss Bunkers, are the kind used, merely because they are the most abundant; the oil is first pressed out of them, and the residue, dried and ground as Fish Guano, or Fish Scrap, is a regular article of trade with the dealers in fertilizers.

Feeding Poultry.—It is a common practice to throw the "chicken food" on the cold snow, sometimes where it is as deep as the fowls can well wade through, or even worse, into a regular mud hole. Neither of these methods is of advantage to the fowls; in the first case they are obliged to swallow a large amount of cold, chilling snow, and in the second, an amount of mud is taken into the stomach that is not desirable. All this discomfort could be avoided by providing a feeding trough, so arranged that the food may be clean. Aside from the looks of the practice, it will pay to be neat in feeding these animals that help to feed us.

Honey Locust Seeds.—L. Heading, and others will find at the end of an article on the Honey Locust, page 63, the information asked concerning the seeds.

Artichokes—Jerusalem—Brazilian.—Several inquiries. There is no such thing as Brazilian Artichoke so far as coming from Brazil any more than there is one coming from Jerusalem. It is not at all likely that this native American plant was ever seen in either place. We have more than once explained how the name Jerusalem came from a corruption of the Italian name *Girasol.* In France, where much more attention has been given to its culture than with us, they have nearly a dozen varieties. When some of our cultivators found that a short, round variety was more productive then the old fashioned long and slender one, they called it "Brazilian,"—a good enough name to distinguish that variety, but it should not be understood to indicate anything about its origin.

Nuts and Nubbins.

A stuck-up thing—A show-bill.

Diet for prize-fighters—Pound cake.

A tornado is a great blow to any country.

We desire to be nnderrated only by assessors.

A musical instrument dealer advertises his drums that "can't be beat."

Charles Lamb said of one of his critics, "The more I think of him, the less I think of him."

In a written-spelling exercise, "Foregoes" was given out: a little boy wrote, "Go, go, go, go."

When a cat gives an entertainment on the top of a wall, it isn't the cat we object to; it's the waul.

A man fell in a fit in a tailor's shop. His envious rival said, "That's the first fit ever seen over there."

Many a rough customer has never known how good he was nutil he killed somebody and heard the lawyer in charge sum up his virtues.

After a Texas jury had disagreed for ninety-six hours, the judge got a verdict in two minutes by sending in word that a circus was in town.

"How far is it to Butler, if I keep straight on!"—"Well, about twenty-five thousand miles, but if you turn the other way it's about half a mile!"

Editor: "Our friend W. has presented us with a basket of grapes, for which he will accept our compliments, some of which are two inches in diameter."

An old lady in Wichita says she never could imagine where all the Smiths came from until she saw in a New England town a sign, "Smith Manufacturing Company."

A washerwoman, commended by her pastor for regular attendance at church, said, "Oh, yes, after my hard week's work it rests me so to come and sit in church and have nothing to think about."

"Which do you think would be the easiest for me to change myself into—a lion, a horse, or an ass?" asked a conceited fellow of a friend.—"Oh, into an ass, as that would require the least change."

A *c* for an *h*. A cow *jumped* on the track before an express train. The report of the danger said: "As the safest way, the engineer put on full steam, dashed against the cow, and literally cut her into calves."

In answer to a Music Committee, an applicant wrote: "Gentlemen, I noticed your advertisement for an organist and music teacher, either lady or gentleman. Having been both for several years, I offer you my services."

"Mr. Smith," you said you once officiated in the pulpit."—"Yes, sir; I held the light to the man that preached."—"Ah! the court understood you differently. It supposed that you delivered the sermon."—"No, sir; I only threw light upon it."

A life insurance agent tells us that only last week a man insured his life for $20,000, paying a single premium, and died the same night, and to-day his family has the money. He advises us to follow the good example. We'll think it over, and ask the family about it.

A Chicago man having put his new trotter to his best speed, proudly asked a policeman why he did not arrest him for fast driving, and was answered: "No cause, sir; you haven't driven fast enough yet to violate no ordinance."—A trotting horse was offered for sale in the next morning's papers.

Teacher (trying to explain repentance): "If a bad boy steals an orange, and his mother catching him at it, tells him kindly how wicked it is and how grieved she is, don't you think that boy ought to feel sorry?"—Scholar: "Yessum."—Teacher: "And why?"—Scholar: "Cause he hain't et the orange before his mother cotched him and took it away from him."

If men were turned out of office *only* when they behaved badly, or because others could perform their duties better, we should find their *chief attention devoted to the performance of good work*, because that would be the root of their tenure of office. Now their most earnest thought is how to carry the next election for their party, as therein lies their tenure of office.

A weary peasant taking his first railway ride on a pitch dark night, wished to take a nap, but was bothered to find a place for his huge three-cornered hat in the crowded car. "*Here*, put it in the cupboard, my good man," said a commercial traveler, opening the window. The drowsy peasant complied, murmuring his thanks, and expressing his ignorance of the ways and conveniences of the rail. He was soon in a sweet sleep; before he awoke the commercial traveler prudently found a seat in another car.

A rich and ingenious mechanician constructed a safe which he declared to be burglar-proof. To convince the incredulous of the fact he placed a $500 note in his pocket, had himself locked in the safe, with a liberal supply of provisions, and the key cast into the river, declaring that he would give the money to the man who unfastened the door. All the blacksmiths and carpenters in the country have been boring and blasting at that safe for a week with every kind of tool and explosive mixture known to science, and the man is there yet! He has convinced everybody that it is the safest safe ever invented. Fears are entertained that the whole concern will have to be melted down in the blast furnace before he is released, and efforts are to be made to pass in through the keyhole a fire-proof jacket, to protect the inventor while the iron is melting.

A dilapidated old man entered a lawyer's office *with a book under his arm*, and looking around, apparently stupidly, inquired if he could see the lawyer. He was pointed to a sign reading: "Very busy just now; will see you later." The man went out. The lawyer heard that his visitor had a $50,000 case. Much vexed, the lawyer tore down his sign. Soon after the man called again with a book under his arm, and was received with great cordiality. He sat down and asked, "Very busy this morning; I don't want to annoy you?"—"Oh, no, plenty of time now; you can't annoy me at all; I shall listen to you with pleasure."—The old man slowly undid the book and began: "I'd like to call your attention to this Life of Napoleon; it is said the engravings alone cost $50,000, and yet the book is selling at only——."

The Death of Alfred Gray.—Just as we go to press, we see the announcement that Alfred Gray, Sec. of the Kansas State Board of Agriculture, died at Topeka, January 23d. No particulars are given of an event that will bring sadness to a wide circle of friends. We must at present content ourselves by saying, that no State has done more for her agriculture, than Kansas, and this has been largely due to the fact, that Alfred Gray was the most efficient Secretary. A practical farmer himself, he appreciated the needs of farmers, and worked most faithfully to supply them. Among the many pleasant recollections that cluster around the Centennial, are those of the delightful hours passed in the society of this most genial gentleman, and surely no State was more worthily represented, than Kansas in his person. The loss which Kansas sustains is a loss to the whole country.

A Good Knife is a good thing, and the further one is "off soundings," whether at sea, or beyond cities and stores, the more does he need a knife upon which he can rely. The cutlery sold in small places, and frontier towns, is much like the celebrated razors of Pindar, "made to sell." One who can be reached by mail, can be sure to get a good knife, a fact, duly set forth in its proper place.

Young Forest Trees.—The raising of most forest trees from the seed is not difficult, provided they can have the proper care in weeding, shading, etc. But this care is what the farmer who most needs the trees, is the least able to give, as it is demanded just at the time when he is busiest. We announced last year, that a great help was afforded to farmers in this matter by Messrs. Robert Douglas & Sons, of Waukegan, Ill. This firm which annually raises many acres of tree seedlings, last year tried the experiment of sending packages of young trees by mail. This was attended by such favorable results, that they propose to continue to do so this year. So greatly were we impressed with its importance, that in making up our list of useful articles for premiums, "Forest Trees by Mail," No. 129, were included. By supplying the farmer on the prairies with trees, that are, so to speak, beyond the dangers incident to childhood, tree planting is rendered a very simple matter, and it should lead to increased activity in this respect. The Messrs. Douglas say, and we doubt not, truly, that there is no appreciable direct profit in the enterprise, and that they hope to find their ultimate returns, in an increased love for tree-planting throughout the whole of the present treeless regions.

Mixed Farming.—Until our country is settled up, and the virgin fertility of the new soil is beginning to be exhausted, we can not hope for that safe and solid foundation for our agriculture which comes from Mixed Farming. When every farmer comes to that point when he knows that his land is a medium through which crude fertilizing elements pass in becoming food—vegetables, fruits, grains, flesh—he will feel the importance of a variety of products—a rotation of crops—and the value of animals in the economy of the farm. As our country grows older from necessity, if for no other reason, farmers will be more thorough students of their profession.

Alkali Soils.—"Red River," Grand Forks, Dakota, writes, there are patches of a few acres, in a place where the soil is so filled with alkali that nothing will grow on them, and asks why it is only in patches, and if anything can be done to get rid of it.... These alkaline patches appear when the subsoil is so impervious as to prevent all natural drainage. The water does not drain off after the rains, but is evaporated; water is continually brought to the surface from the subsoil by capillary attraction, and the salts it contains (Lime, Soda, and Potash), are left on the surface. The trouble can be remedied by draining, or by draining and irrigation. Drainage will give the water a chance to pass off, and in time the rains will wash out the excess of alkali. If irrigation can be employed, this washing out process will be much hastened. Irrigation without drainage would be of no use, for when the surface became dry again, the old state of things is restored. In some portions of Colorado, the reclaimed alkali soils are regarded as their most valuable land.

Tree Peddlers Again.—"J. M. L.," Vienna, Kans., writes that three persons came to his town pretending to be agents of a certain nursery in Illinois. They offered "Russian apples at $1 each, claiming them to be imported from Russia at one year old, and to be borer proof, pear trees grown one year in France, and far superior to anything ever offered in this country, cherry trees grown one year in England, and peaches grown one year in Canada, and far superior to native trees."—We never heard of the nursery that these parties claim to represent, still there may be such. "They also claim that there are but four nurseries that import fruit in this way two of them in New York, one in Ohio, and this one in Illinois." Our correspondent asks: "Are there such apples as Russian Borer-proof, and are fruit trees imported in the manner stated, or is the whole thing a swindle, and is there any way to get out of receiving the stock ordered?"—We get every spring and fall more or less letters of the same purport, from persons, who, persuaded by the representations of "nursery agents," give them orders, and afterwards suspecting that the stories are not true, repent of their haste, and write to ask if they are obliged to abide by their agreement. Of course if one has ordered trees under false representations, he can not be bound by his agreement. The trouble will be to prove that the representations are false. If the truth is known, it will probably turn out that every one who ordered trees from these chaps has signed a note which is held against him. They got the name by asking for his address, or in some other way. The chance of repudiating the order will depend upon what kind of a judge or justice "dispenses with the law" in the locality. Take the case in point: Russian apples are not "borer-proof," and they are only to be preferred to other apples in localities where their probable greater hardiness will allow them to endnre the climate. Kansas does not need them. Pear, cherry, and peach trees of one year old, are not generally imported from the countries named, still it can not be *proved* that the trees were not imported. If it was claimed that the trees were any better for being grown a year in another country, that is a false representation. We have little doubt that the whole affair is a swindle. The trouble will be to convince the court of that should the case be brought up. All anxiety and trouble may be saved, as well as the future disappointment when the trees come into bearing, by the exercise of a proper caution. Every one should know that growing a peach in Canada, or a cherry tree in England, will in no manner alter its nature, and the mere fact that an apple was raised from the seed in Russia can not possibly protect its trunk from a Yankee borer. Still another way of avoiding trouble with tree peddlers, is not to buy of them at all, but purchase of well-known nurserymen.

Sorghum in America—Its Introduction.

An Interesting Bit of History.

In the spring of 1856, the Editor of the *American Agriculturist* received a small parcel of Sorghum seed from Messrs. Vilmorin, Andreux & Co., the noted seedsmen of Paris, who had brought it from China. It was planted in rich garden soil, and grew 13 to 15 feet high, maturing its seed well. The children of the neighborhood found the juices of the stalks so sweet that they used up a large part of the three rows 25 feet in length. A sketch of one of the plants was made and published, with a description, in this journal for February, 1857. It was subsequently announced that the seed would be distributed among our readers, to be divided equally among all who should send an envelope directed to themselves—say from 25 to 50 seeds each. This publication brought samples to the office from three other parties within 30 miles of N. Y. City. Soon after a stranger came in and tried hard to buy all our seed. When his offer reached $8.00 a pound, he was informed that it would not be sold at any price, as it was already *promised* to our readers. He then produced a newspaper item from the West, where he had been traveling, and said the interest was so great that he could divide a pound into a hundred or more parcels and sell them quickly at $1.00 a parcel. As soon as he left the office, the Editor sent out and bought all the seed in the three localities he had heard of, at $5 a pound. At the same time he wrote to the Paris seedsmen to send him all the seed they had, and draw on him for the pay. To his surprise—consternation almost—they returned word by the next steamer that they had shipped **1,000** lbs. (no Atlantic Cable then) and held 600 lbs. more to his order. The whole was ordered at once, and when the 1,000 lbs. arrived it was immediately announced that none of it would be sold, but that a packet of at least 400 seeds would be *presented* to any reader of the *American Agriculturist* who desired it—enough to experiment with and to provide an abundant supply of plants the next year if it proved valuable. *Thirty-One Thousand* (31,000) Parcels were distributed to our readers throughout the country, and planted. Enough was saved and sent to Georgia to grow 34,500 lbs. (17¼ tons) of seed, during the summer of 1857. This was sent to this office, and a full pound given to every reader desiring it for 1858—over 30,000 pound parcels were thus distributed.

From the above seed thus widely and freely scattered was produced at least nine-tenths of all the Sorghum grown in this country. (A small quantity was sent out from the Patent Office, and some sold by dealers). Hundreds of millions of gallons of syrup were made and used during the war when the usual supply o Southern grown sugar was cut off. It was worth many millions of dollars to the country. But such difficulty was experienced in producing good *sugar* that the cultivation fell off after the supply of South grown sugar came in. Quite a "boom" was started later on by high claims asserted for a variety called the African "Imphee," but this soon died out. Recently, the improved processes of obtaining the saccharine matter in crystalline form, as sugar, have given a new impetus, and very promising results are anticipated, as noted on pages 101-102.

Catalogues Received.

When a catalogue includes more than one department of business—as Nursery and Greenhouse, we, as heretofore, place it under what appears to be the leading branch.

SEEDSMEN.

HUGO BEYER, New London, Iowa.—Besides Vegetable and Flower Seeds offers Greenhouse Plants, Bulbs, etc.

J. BOLGIANO & SON, No. 23 South Calvert Street, Baltimore, Md.—One of the oldest houses in the country, and has several novelties, including the Queen Tomato.

ALFRED BRIDGEMAN, No. 876 Broadway, New York.—A year older than the above; a very compact, and ably illustrated list of everything in the trade.

JOHN LEWIS CHILD, Queens, Queens Co., N. Y.—Flower Seeds in half dime packets. Bulbs and Greenhouse Plants. Illustrated.

COLE & BROTHERS, Pella, Iowa.—Vegetable, Flower, and Farm Seeds; full, compact and illustrated.

CROSSMAN BROS., 300 Munroe Avenue, Rochester, N. Y.—A wholesale list of Vegetable and Field Seeds.

J. A. FOOTE, Terre Haute, Ind.—Vegetable and Farm and Flower Seeds. Neat, compact, and business like.

JAMES J. H. GREGORY, Marblehead, Mass.—Characteristic in every feature, especially in the many novelties and specialties. Also the Hubbard Squash.

E. M. HAVEN, Bloomingdale, Van Buren Co., Mich.—Vegetable Seeds and Hot-bed and Garden Vegetable Plants.

THOMAS MEEHAN, Germantown, Pa.—Special list of Tree, Shrub, and Fruit-tree Seeds.

T. M. METCALF, St. Paul, Minn., offer largely the growth of their "North Star Seed Farms." Also Small Fruits and Forest Tree Seedlings.

E. A. REEVES, No. 68 Cortlandt Street, New York, sends a neat illustrated list of Vegetable and Farm Seeds, and another for Flower Seeds, both very full and complete.

I. J. SIMONSON, No. 63 Barclay Street.—Send out separate catalogues for Vegetable and Flower Seeds, the selection in both very large.

WM. W. STERLING, Cutchogue, N. Y.—A select list of Vegetable Seeds of his own growing.

JAMES M. THORBURN & Co., No. 15 John Street, N. Y.—For nearly 80 years Thorburn's seed store has been known to New Yorkers; the catalogue is a wonder of capaciousness and compactness, and presents an innovation by being illustrated.

NURSERYMEN.

GARRET H. BANTA, Riverdale, Bergen Co., N. J.—A select list of Fruit and Ornamental Stock, Evergreens, etc.

CHERRY & NEUSON, Nashville, Tenn.—Besides Fruits, of which there are many Southern varieties, very full in Evergreen and other Ornamental Trees and Shrubs.

JOHN S. COLLINS, Moorestown, N. J., sends his wholesale list of Small Fruits, etc.

ROBT. DOUGLASS & SONS, Waukegan, Ill.—To their usual wholesale list of Evergreen and Ornamental Tree seedlings add much interesting descriptive matter. Also a list of Forest Trees by mail.

ELLWANGER & BARRY, Rochester, N. Y., send a special list of Strawberries, with useful directions for culture.

THE GOULD NURSERY, Beaver Dam, Wis.—Selections with special reference to the climate of the Northwest in Fruits and Ornamental Stock.

CHARLES A. GREEN, Clinton, Munroe Co., N. Y.—Small Fruits, accompanied by a treatise on their culture.

DAVID HILL, Dundee, Ill.—Wholesale list of Evergreen and Forest Tree Seedlings, also older stock and Fruit Trees, etc.

KING & MURRAY, Flushing, N. Y.—This, the Bloodgood Nursery, shows no signs of age in its catalogue, except the statement that it was established in 1790.

J. T. LOVETT, Little Silver, Monmouth Co., N. J.—A full catalogue of Small Fruits with various specialties.

T. V. MUNSON, Denison, Texas.—Fruit and Ornamental Stock, with special reference to the wants of the State.

JOHN C. NELTNOR, Turner Junction, Ill.—Two very neat, compact, and comprehensive lists, one of general Nursery Stock, and the other devoted to Strawberries, with descriptions.

C. M. SILVA & SON, Newcastle, Cal.—Fruit and Ornamental Trees suited to the Pacific coast.

W. C. STEELE, Laporte, Ind.—A price list of Small Fruits in great variety.

H. M. THOMPSON & SON, St. Francis, Wis.—Seedlings of Evergreen and Decidnous Trees, Fruits and Tree and Shrub Seeds. Wholesale list.

B. F. TRANSOU & Co., Humboldt, Tenn.—A genera stock of varieties best suited to the State, some of which are local.

F. TROWBRIDGE, Milford, Coun.—A Cranberry circular.

E. B. UNDERHILL, Poughkeepsie, N. Y., sends a neat and well classified list of Small Fruits, or "berry plants."

JOHN VAN LOON, New Amsterdam, Wis.—Small Fruits and others, with special reference to hardiness. Seeds and Ornamental Plants.

GEO. S. WALES, Rochester, N. Y.—Small Fruits, specialties in Vegetable Seeds and Vegetable Plants, also a treatise on Strawberry culture.

ZIMMERMAN BROS., Cameron, Mo.—A collection of Fruit and Ornamental Stock suited to the climate.

FLORISTS.

THOMAS ELVERSON, New Brighton, Beaver Co., Pa.—Very full and excellent list of greenhouse and other Plants.

PETER HENDERSON, No. 35 Cortlandt Street, N. Y.—A special low rate list for collections of Plants.

LEEDS & Co., Richmond, Ind.—Both wholesale and retail lists, including many novelties. Roses a specialty.

ARNOLD PUETZ. Jacksonville, Fla.—Plants, Bulbs, Rustic work, and young Alligators.

WM. B. REED, Chambersburg, Pa.—Special Rose list and greenhouse Plants.

A. WHITCOMB, Lawrance, Kan.—A choice selection, including novelties in the usual "neat as a pin" style.

LIVE STOCK.

A. G. ATKINS, Orange, N. J.—Jersey Cattle, Berkshires, and Fowls of choice breeds,

BAKER & HARRIGAN, Comstocks, Washington Co., N. Y.—A large list of Trotting stock with pedigrees.

E. DILLON & Co., Bloomington, Ill.—Illustrated catalogue of their immense stock of Norman French Horses.

L. L. REED, Auburn, Ohio.—Thorough-bred stock from Pigs to Pigeons.

A. M. SHEPERD, Sand Brook, N. J.—The leading varieties of Fowls and their eggs.

L. B. SILVER, Cleveland, O.—Catalogue of "Ohio Improved Chester Swine."

MACHINERY AND MISCELLANEOUS.

J. L. CASE & Co., Racine, Wis.—A Farmer's Guide Book, which is a complete almanac, besides setting forth Separators and Powers.

THE CHICAGO SCRAPER AND DITCHER Co., at Chicago and Maywood, Ill., set forth the merits of their Screw Pulverizer, and illustrate it in a comprehensive circular of over 40 pages.

A. B. COHU, 197 Water Street, N. Y.—An immense variety of Farm Implements and Machinery, with many specialties and novelties.

EUREKA MOWER Co., Towanda, Pa.—Illustrate their direct Draft Mower, Enreka, in several forms.

WILSON L. GILL, Columhus, O.—Plows in great variety illustrated and described.

HEEBNER & SONS, Lansdale, Pa.—Horse Powers, Threshers, Sawing Machines, etc.

H. W. HILL & Co., Decatur, Ill., set forth their numerous hardware specialties, Hog Rings, Animal Markers, etc., in a handsome pamphlet, and also in a humorous sheet entitled "That Hog of Mine."

A. MCCREADY & BRO., New Galilee, Pa.—Excelsior (Dog) Churn Power.

MILLBURN WAGON COMPANY, Toledo, O.—A catalogue of Carts, Farm Wagons, Buggies, etc., beautifully illustrated and concisely described.

OPPENHEIM MANUFACTURING COMPANY, New Haven, Conn.—The Oppenheim Double Buggy illustrated in several forms by handsome photographs.

RANKIN REFRIGERATOR Co., New York.—Cooling and Ice Making Apparatus.

GEO. F. SHEDD, Waltham, Mass.—Portable Steam Engines.

S. E. & J. M. SPROUT, Nuney, Pa.—The William Evaporator.

FOREIGN CATALOGUES.

JOHN A. BRUCE & Co., Hamilton, Canada.—A full and illustrated catalogue of Seeds of all kinds.

F. C. HEINEMANN, Erfurt, Prussia.—Catalogne of Seeds, Fruits, Plants, Bulbs, etc., and an immense one it is.

STATEMENT

OF

The Mutual Life Insurance Company of New York,

F. S. WINSTON, President,

For the Year ending December 31st, 1879.

Annuity Account.

	No.	Ann. Pav'ts.		No.	Ann. Pav'ts.
Annuities in force, Jan. 1, 1879..	53	$20,549 09	Annuities in force, Jan. 1, 1880..	49	$18,504 97
Premium Annuities.....		5,981 63	Premium Annuities.....		5,289 31
Annuities Issued.....	2	701 00	Annuities Terminated.....	6	3,437 44
	55	$27,231 72		55	$27,231 72

Insurance Account.

	No.	Amount.		No.	Amount.
Policies in force, Jan. 1, 1879..91,828		$290,774,315	Policies in force, Jan. 1, 1880..95,423		$298.760,867
Risks Assumed.....12,210		38,394,554	Risks Terminated 8,615		30,408,002
	104,038	$329,168,869		104,038	$329,168,869

Revenue Account.

Dr.		*Cr.*	
To Balance from last account.....$84,174.076 42		By paid Death and Endowments Claims (matured and discounted)....	$7,007,195 25
" Premiums received..... 12,687,881 72		" " Annuities.....	25,080 78
" Interest and Rents..... 4,942,211 70		" " Dividends.....	3,427,479 00
		" " Surrendered Policies and Additions.....	3,555,800 41
		" " Commissions (payment of current and extinguishment of future).....	668,942 74
		" " Contingent Guarantee Account..	302,908 08
		" " Taxes and Assessments.....	350,324 26
		" " Expenses	700,923 60
		" Balance to New Account.....	85,765,515 68
	$101,804,169 84		$101,804,169 84

Balance Sheet.

Dr.		*Cr.*	
To Reserve at four per cent $83,210,134 00		By Bonds Secured hy Mortgages on Real Estate.....$54,895,134 77	
" Claims by death not yet due..... 619,895 00		" United States and other Bonds....	18,917,618 12
" Premiums paid in advance..... 103,592 64		" Loans on U. S. Bonds.....	2,100,000 00
" Surplus and Contingent Guarantee Fund..... 4,529,373 17		" Real Estate.....	7,811,805 18
		" Cash in Banks and Trust Companies at interest.....	2,363.337 28
		" Interest accrued.....	1,397,061 07
		" Premiums deferred, quarterly and semi-annual	809,705 97
		" Premiums in transit, principally for December.....	99,974 35
		" Balances due by Agents.....	68,358 07
	$88,462,994 81		$88,462,994 81

NOTE.—If the New York Standard of four and half per cent Interest be used, the Surplus is Eleven million one hundred and forty-one thousand, forty-one dollars and four cents.

From the Surplus, as appears by the Balance Sheet, a dividend larger on policies paying the old rates than that for the previous year, also on other policies in proportion, will be awarded to such as shall be in force at their anniversaries in 1880.

The rates for life insurance in this Company were reduced in 1879.

New York, January 22, 1880.

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E. P. Roe Offers one of the largest and finest stock of SMALL FRUIT PLANTS AND GRAPEVINES ever grown in this country. Prices very reasonable. Also a superbly illustrated book, "SUCCESS WITH SMALL FRUITS," with a very liberal offer. Also the original stock of the celebrated CUTHBERT RASPBERRY secured by special outlay. Send for illustrated catalogue. Address

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W. L. FERRIS, Jr., *Successor to Ferris, Minard & Co.*, **385 and 387 Main St., Poughkeepsie, N. Y.**

D. E. HOXIE, Northampton, Mass.

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Compton Corn, Prickly Comfrey, etc. Circular free.

500 Sharpless Seedling Strawberry
500 Miner's Gt. Prolific "
500 Crescent Seedling "
} $5.00.

Strawberries, Raspberries, Grapes Vines, Fruit Trees. Price List free. **S. C. DE COU,**
Moorestown, Burlington Co., N. J.

RELIABLE BERRY PLANTS

CHEAP. OVER 100 KINDS. For Circular, with Prices and Opinions, address
E. B. UNDERHILL, Poughkeepsie, N. Y.

3999999 Fruit Plants, Vines, Trees, etc. Best of stock, at lowest living rates. See some prices page 115, or send for J. S. COLLINS' Catalogue.

RUTTER ON THE PEACH, a new practical treatise from 30 years' experience in successful peach-growing in Pennsylvania and Maryland. Cause of, and remedies for, "*Yellows*" and other diseases in the tree. Price, **$1.** Address,
J. RUTTER, West Chester, Pa.

FRUIT TREES. APPLE, PEAR, PLUM, CHERRY, PEACH, and QUINCES. American and Spanish Chestnuts. 50 Acres of Ornamental Trees, Shrubs, Roses, etc. Osage Orange. A Descriptive Catalogue sent free.
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30 miles from Phil., 60 miles from N. Y., on Pa. or D. & B. B. R. R. T.

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The best Root for feeding Stock. **40 tons raised** per acre. Send for circular.
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Send stamp for Trade List. AGENTS WANTED.
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WE HAVE NEVER BEFORE combined so well, variety of work with perfection and ease of operation. These machines quickly save first cost. They are prominent *Agriculturist* **Premiums,** and JAS. VICK says he has never sold any so popular. Correspondence is particularly solicited, and descriptive catalogues with numerous engravings are sent FREE.
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JOSEPH BRECK & SON, Boston, Mass., General Agents for New England.
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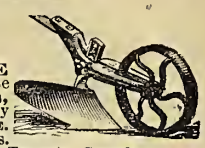
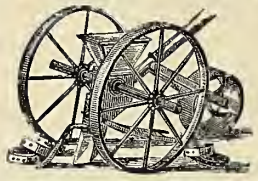


THE MONITOR SEED DRILL.



This is the most complete and positive **Seed Drill** ever invented. It is radically different from and superior to all others. It is the **only** machine which measures and drops the seed with a positive motion, and exactly the same amount at each foot or yard. It has been tested by 6 years' use in Massachusetts, and was awarded the **highest prize** at the "Centennial." ☞ The **"MONITOR"** has been thoroughly tested during the seasons of 1878 and 1879, and heartily endorsed as a

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Vegetable AND Flower **SEEDS** For Everybody.

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Over 100 varieties of each kind, suited to all sections. A full list of the new, long keeping Apples, Queen of the Market and Reliance Raspberry, Sharpless and other Strawberries, Japan Persimmons,—with a full line of No. 1 stock in variety. Root Grafts put up to order. A 65 page Catalogue mailed gratis to all applicants.
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Established 28 years—600 Acres—13 Greenhouses. The following are now ready for distribution—**New General Descriptive Catalogue, 25c. New Plant** Catalogue and **Price List free.** Address
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ESPECIALLY DESIRABLE for SHIPPING LONG DISTANCES.
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Solves the **FENCE** Problem by meeting all the requisites of

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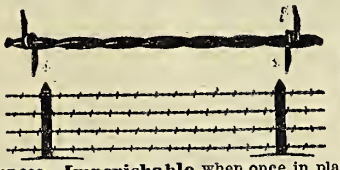
Every Land Owner should not fail to examine the merits of this fence. It is cheaper than all others. Easiest handled, and in fact just what the people of the treeless States have needed for years.



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100,000 miles of Barb Fence have been erected in 1876, 1877, 1878. Agriculturists, Herdsmen, Sheep Husbandmen, Ranchmen, Vineyard Proprietors, Orchardists, Nurserymen, Railroad Companies, Road Proprietors, and all owners and occupants of soil and areas to be protected.

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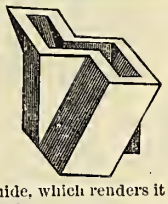

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First drive post with wrought iron guide in place, then drive cross-pieces through guide, which renders it more immovable than any other post, in the setting of which the ground must be displaced.

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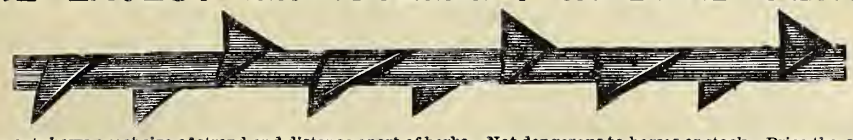

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The only Mill that will grind Corn with Shuck on without extra expense. The only Mill grinding Corn and Cob successfully, that will grind Shelled Corn fine enough for family use.

Grinds twice as fast as any other Mill of same size and price.

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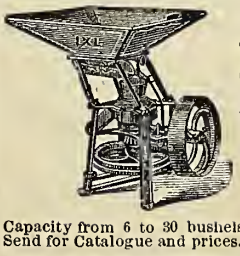

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Cheap, Effective, and Durable.

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Capacity from 6 to 30 bushels per hour, according to size. Send for Catalogue and prices.

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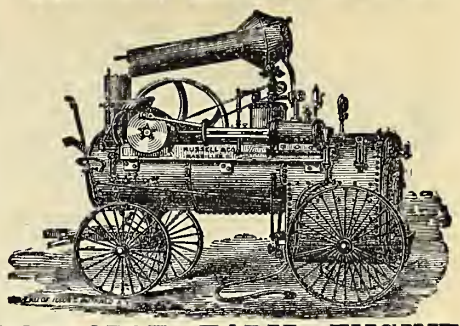

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WITH THEIR

"NEW MASSILLON" THRESHER,

Makes the Best THRESHING outfit known.

Ohio, Pennsylvania, and Wisconsin Testify.

From John Bechel, New Washington, Ohio.

Threshermen, look here. If you want a good machine this season buy the "New Massillon." It beats them all. No more growling about not threshing clean, or beater wrapping, or stirring at the riddles. That is all done away with. Start up in the morning and thresh till noon without stopping for anything.

I threshed 500 bushels of wheat and never stopped till all was out; could have threshed 200 bushels more before we had dinner.

Threshed 1,700 bushels of grain in one day; had to stake three times, and had to move two miles at that. The new riddle that is put in now cleans ready for market.

I threshed 55 bushels of timothy seed in two hours, and 135 bushels in one-half day. How is that for high. I can beat anything that travels the highway in threshing any kind of grain; don't care where they come from; don't except any of them.

Put the "Massillon" Engine and the "New Massillon" Separator together, and there isn't another machine made to beat it. Gentlemen, I am satisfied that I have the best machine in the United States. Have threshed twelve years and ought to know a little about threshing.

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I had my threshing done this season by the "New Massillon" Separator and 10-Horse Traction Engine, and they gave me the best of satisfaction. It was the best work I ever had done. It threshes fast, takes all the grain out of the straw and chaff, separates and cleans it well, and don't cut or break it.

There is no choking or clogging of the machine.

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The No. 8 "New Massillon" Separator and 10-Horse Engine that I bought of your agent at this point, has given me the best of satisfaction, and after a full season's work I can say, without any hesitation, that it is a No. 1 outfit in every respect for fast and good work in all kinds of grain, and especially in timothy and flax. (A want long felt by every farmer, is now supplied by your "New Massillon.") I paid the cash for my outfit, after giving it the most severe tests, and being warned by agents and general agents of other so-called first class Machines and Engines that they were worthless.

But I bought your machine on my own judgment, paying very much more than I could have bought other machines for, and will say here that I can beat any or all who oppose you or your "New Massillon," for I can assure you that you have a world beater.

Address for Catalogue, Price Lists, and address of nearest agent,

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Capital $200,000.00. Net Surplus, $216,645.62. Total assets for the security of Policy-holders, January 1st, 1879, $1,150,063.99. Insures only Farm Property and Residences against fire and lightning. Takes no business risks.

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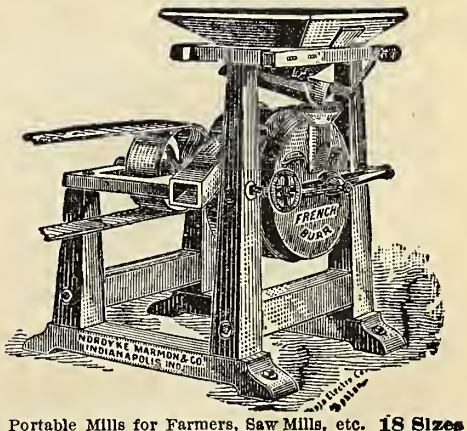
ESTABLISHED 1851.

Grist Mills of French Buhr Stone.



Portable Mills for Farmers, Saw Mills, etc. **18 Sizes and Styles. Over 2,000 in use.** $80 and upwards. Complete Mill and Sheller $95. A boy can grind and keep in order. Adapted to any kind of suitable power. Complete Flouring and Corn Mill. **ALL SIZES.** Send for Circular No. 28. **NORDYKE & MARMON CO., Indianapolis, Ind.**

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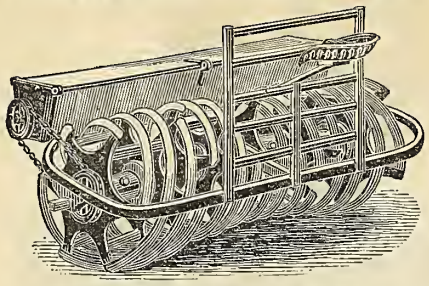

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ABILENE, KANSAS, Nov. 10, 1879.
I seeded 3,400 acres of wheat with these machines....The stand of wheat is now the best I have ever seen on new land. R. J. WEYMESS, Trustee.

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This year I harvested, on 190 acres, 6,100 bushels of wheat. ....In my opinion the Screw Pulverizer increased the crop one-third over what I could have got by any other method. D. G. MOORE.

Send for pamphlet with cuts, and over sixty letters from men who have the machine. Address,

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Do not fail to send for a complete explanatory circular and instructor of the

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The only one made having the celebrated never-failing **CONE GEAR** and **DOUBLE FORCE FEED**, and is sold everywhere with the greatest satisfaction to both purchasers and dealers. Also the reliable

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THE
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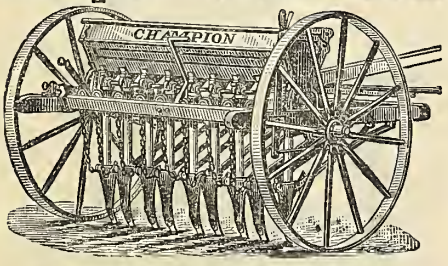

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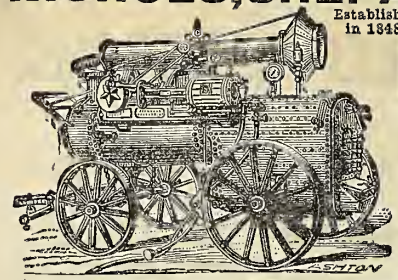

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THE STANDARD of excellence *throughout the Grain-Raising World.*
MATCHLESS for Grain-Saving, Time-Saving, Perfect Cleaning, *Rapid and Thorough Work.*
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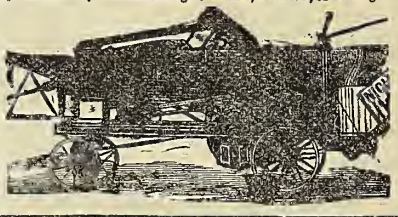

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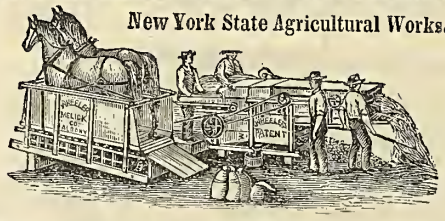

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Send stamp for Circular and report of Centennial trial.

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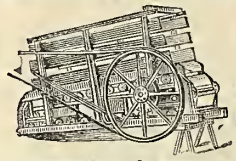

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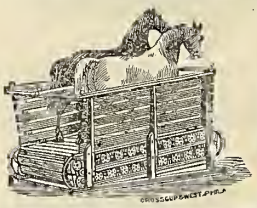

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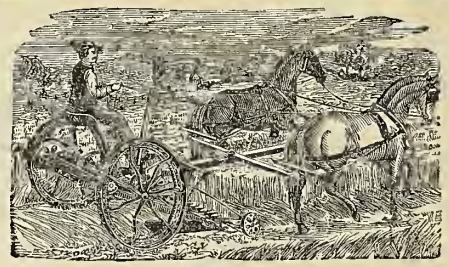

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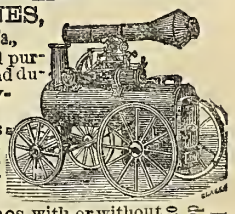
A. B. FARQUHAR, York, Pa.,
Cheapest and best for all purposes—simple, strong, and durable. Also Horse Powers and Gin Gear.



SAW, GRIST AND COB MILLS, GINS, PRESSES AND MACHINERY generally. Inquiries promptly answered.

Fig. 1.

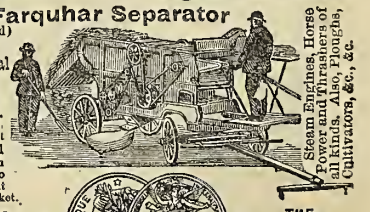
Vertical Engines, with or without wheels, very convenient, economical and complete in every detail, best and cheapest Vertical in the world. Fig. 1 is engine in use. Fig. 2 ready for road.

Fig. 2.

Boiler & Cylinder larger than other makers.

Send for Catalogue.

The Farquhar Separator
(Warranted)



Penna. Agricultural Works, York, Pa. Lightest draft, most durable, simplest, most economical and perfect in use. Wastes no grain, cleans it ready for market.

Steam Engines, Horse Power and Thrashers of all kinds. Also, Ploughs, Cultivators, &c., &c.

AND HIGHEST PRIZE AWARDED SEPARATORS,

THE SILVER MEDAL AT Paris Exposition.

Send for Illustrated Catalogue. *Address A. B. Farquhar, York, Pa.*

$1000, REWARD

For any Washing Machine that will Wash Cleaner, Quicker, with Less Labor and Wear and Tear of Clothes than the

ROBBINS FAMILY WASHER AND BLEACHER,

THE ONLY PERFECT SELF-OPERATING WASHER IN THE WORLD.

No rubbing required. No more yellow clothes nor hard work on washing day. No more rubbing clothes full of holes. No more lame backs for farmers' wives washing harvest shirts. Seeing is believing, and if you will try it once, you will never again wash without it, nor use any other washing machine.

IT IS THE BEST IN THE WORLD, and will wash anything from a lace curtain to a horse blanket, and cannot get out of order.

Good Agents Wanted, both Male and Female, to whom Liberal Inducements are Offered.

AGENTS CAN MAKE FROM $10 TO $100 PER WEEK.

INDISPUTABLE EVIDENCE.

"A Splendid Washing Machine."

This is what they call the Robbins Family Washer at the home of the business manager of "Farm and Fireside." Heretofore it required one woman a whole day from early morn till late at night, to finish the washing, and an extra girl to cook. But since we got a Robbins Washer one girl attends to the washing, cooks dinner at the same time, and has all the clothing hung out to dry, and tubs, wringer, and everything put away before 12 o'clock noon. We wish we could tell our subscribers how delighted they are at our house with this simple washer, and also get them to understand that we write this simply and entirely for their benefit, and not at the solicitation of the manufacturers, nor with their knowledge or consent; but we write this to let our readers know that the Robbins Washer has actually proven to be an article that does all the manufacturers claim for it, and really does away with a great part of the drudgery required in washing clothes. We would pay many times the price asked rather than do without one. We have also noticed that it requires less soap than formerly, so that the saving in the soap will in a short time pay for the machine.—Springfield, O., Farm and Fireside, Oct. 1.

Publisher of Farmers' Review, Chicago, Ill., received a sample, and after giving it a trial, sends for $24 worth for his friends and neighbors.

The publishers of the New York Christian Advocate, after receiving sample washer, say: "It requires to be honestly tried a few times only to convince the housekeeper that she has found a friend and economizer of labor in the Washer. We have confidence in commending it to the attention of our lady readers."

The N. Y. Witness says: "Several of our staff have the machines in use, and are well satisfied with them."

N. Y. Weekly Sun says: "The Robbins Washer and Bleacher is as represented."

The Toledo Blade says: "We believe it to be one of the greatest inventions of the age."

The Chicago Inter-Ocean says: "The company could not well say less of that truly wonderful article, which is destined at no distant day to work a complete revolution in the method of accomplishing the family washing. We speak from our own knowledge, as well as from the testimony of thousands who have already availed themselves of its services."

E. B. Mack, N. Y. office of the Cincinnati Gazette says: "I have one in use in my house and it does admirable work."

D. F. Raymond, Cincinnati, O.—"Can I have Cincinnati and Hamilton County, Newport and Covington, Ky., by ordering $100 of Washers at once? Have waited to see what Washer would do; am delighted; does all you claim."

Again, December 9: "Inclosed please find draft for $100 on Met. National Bank. Please hurry along the Washers."

C. H. Mather, Burlington, N. Y.—After purchasing sample and "convincing the sceptical ones," orders $24, $75, $50, $24, $65, $24 worth in rapid succession.

W. P. Pratt, Frankfort, Me.—"I want the agency for your Washer and Bleacher. We have had one in our family for three years, and we think it an indispensable article. Several of our neighbors, I think, will buy."

J. H. Hill, of Campti, La., Jan. 23, 1880, writes: "My wife would not take fifty dollars for ours."

WE COULD FILL THE COLUMNS OF THIS PAPER WITH SUCH EVIDENCE. WILL PEOPLE BUY A HUMBUG THE SECOND TIME?

☞See October number of *Agriculturist*, page 374, article on "Washing Machines and Washers."

The above is no boastful offer, made only for the sake of selling our Washer, but, on the contrary, we mean exactly what we say, and will really give $1,000 for any washing machine that can be proven better than ours before a competent committee. Any reader who doubts our ability to do all we agree, can easily be convinced by referring to the Mercantile National Bank of this city, to any express company in New York, or to the publishers of this paper.

SAMPLES PREPAID TO YOUR NEAREST RAILWAY EXPRESS OFFICE in any part of the United States east of the Mississippi and Missouri rivers, also Kansas and Nebraska, for $3.50. West of that line as follows: In Dakota, at Bismarck, or Yankton, for $3.50; in Wyoming, at Cheyenne, for $3.50; in Idaho, at Franklin City, for $4.50; in Colorado, at Denver, or Pueblo, for $4; in New Mexico, at Sante Fe, for $5; in Arizona, at Prescott, for $8.50; in Utah, at Ogden, for $4; in Nevada, at Virginia City, for $5; in Louisiana, at New Orleans, for $3.50; in Arkansas, at Little Rock, for $3.50; in Texas, at Corsicana, for $4.50; at Texarcana, Denison, or Sherman, for $3.50. For the Pacific coast we will deliver No. 1 at San Francisco, Sacramento, Marysville, or San Jose, for $4. Our reason for so doing is to induce people to investigate this matter, feeling assured that a trial will secure an agent for us.

Send for a sample and secure A BUSINESS THAT WILL PAY YOU WELL. No article in the world has so much MONEY IN IT FOR AGENTS as this Washer.

When you order or write, mention this paper.

Address

Bissell Manufacturing Co.

50 BARCLAY STREET, N. Y.

CAUTION.—We hereby warn all persons against making, selling, or using any washer working on the principle of the ROBBINS FAMILY WASHER AND BLEACHER. Many imitations are now being offered for sale, even going so far as to use the descriptive portions of our circular and advertisements in order to mislead the public. We will prosecute all infringements to the full extent of the law.

THE

AMERICAN SUBMERGED PUMP

IS A DOUBLE-ACTING, NON-FREEZING

FORCE-PUMP.

Will draw water from 1 to 100 feet, with one-man power, and also force water to any required distance.

Prices, complete,

$15 to $75.

RUBBER HOSE,

For Garden Purposes, at manufacturer's prices.

Wakefield, Perfection, and Peerless

EARTH CLOSETS

Are the Best. Prices, $6.50 to $40.

Address

HENRY H. B. BLOOMFIELD,

34 DEY STREET, N. Y.

For Washing Windows, Carriages, etc. Protects Buildings from Fire, and Trees, Vines, etc., from Insects, Potato Bugs and Canker Worms. No Dwelling, Country Home, or Factory, should be without the Fountain Pump. Send for large Illustrated Circular.

J. A. WHITMAN,

Patentee & Manufacturer, **Providence, R. I.**

How to get a Revolver.

The largest and costliest Catalogue of Revolvers, &c., in the world, containing exact pictures of *nearly every Revolver in existence;* a valuable book of reference in itself. **Sent free** to any address. ☞ $6. 32 calibre Revolvers reduced to $2.75. **Colt** Revolvers, $2.50. BIGGEST BARGAINS EVER KNOWN.

Catalogue explains how one man in every Town in the United States can get a $6 Revolver free. Address the

ESSEX REPEATING ARMS CO.,

57 Washington St., Boston, Mass., U. S. A.

SAVE YOUR MONEY in Cooking. Better food at less cost. The use of our **Economical Cook Book** will save money daily in every household. 130 pages, with cover, and 1,000 Economic Recipes. Only 15 cts., postpaid. Large Ill. Catalogue of Books, Pictures, etc., free. J. L. PATTEN & CO., 47 Barclay St., New York.

LIQUID COTTAGE COLORS.

25 Shades ready for Brush.

The Best MIXED PAINTS in Market.

Also **Barn, Bridge, and Fence Paints.**

Send for circular.

CHICAGO WHITE LEAD & OIL CO.,

Cor. Green and Fulton Sts., Chicago, Ill.

E. W. BLATCHFORD Pres. C. F. GATES, Treas.

THIS NEW

ELASTIC TRUSS

Has a Pad differing from all others, is cup-shape, with Self-Adjusting Ball in center, adapts itself to all positions of the body, while the **BALL** in the cup **PRESSES BACK the INTESTINES JUST AS A PERSON WOULD WITH THE FINGER.** With light pressure the Hernia is held securely day and night, and a radical cure certain. It is easy, durable and cheap. Sent by mail. Circulars free.

Eggleston Truss Co., Chicago, Ill.,

$10,000 INSURANCE FOR 35 Cts.

ON LIFE & PROPERTY.

$10,000 will be paid to any person who can *EXPLODE A LAMP* fitted with our **SAFETY ATTACHMENT.**

Mailed free for 35 cts. Four for $1.

Agents Wanted, Male or Female.

S. S. NEWTON'S SAFETY LAMP CO., BINGHAMTON, N. Y.

SALESROOM, 13 WEST BROADWAY, N. Y.

COPPER PATCH PLATE

For mending Tin, Brass, Copper, Lead, or Iron, without acid or soldering iron. Any lady or child can mend with it. Will send one sample Plate by mail (with directions) that will cut 192 ¼-in. square patches, on receipt of 25c.; 8 for $1; 100 for $10. (Postage stamps rec'd as cash.) AGENTS WANTED. Can carry one day's stock in your pocket. Sales will yield $3 to $15 per day. Our 64-page Illustrated CATALOGUE of Chromos, Jewelry, Novelties, Stationery, &c., FREE. Address CITY NOVELTY CO., 108 South 8th St., Philadelphia, Pa. Mention this paper.

$14 SHOT GUN!

The Best Double-Barreled Shot-Gun in the world for the money. Warranted genuine twist, with *Rask, Belt Box Wads, Box Caps and Wad Punch.* Also our celebrated Kentucky Rifle for *$12, warranted or no sale.* Send for Illustrated Catalogue and Price Lists to

James Bown & Son, Enterprise Gun Works,

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ESTABLISHED, 1848. *Pittsburgh, Pa.*

L. E. RANSOM, 34 MAIDEN LANE, N. Y. CITY. **Perfect Butter Color** at lowest prices.

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The Delaware Double Caned Chairs are sold from Ocean to Ocean. If you want a Chair for the Library, Sitting Room, Lawn, or Office, that is strong, right in the seat, right in the back, right everywhere, ask for the genuine.

All not so branded are imitations.

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THE DELAWARE © CHAIR TRADEMARK.

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Everybody gets it for a Dollar. Subscription No Club Rates. Agents wanted. Easiest paper to canvass for in the world. If you want a specimen copy before subscribing, send for it. Tell all your neighbors about the great Dollar Weekly Agricultural Paper. It has no equal. Present circulation 50,000 copies.

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NEW ORGANS **13** Stops, **3** set Golden Tongue Reeds, **5** Octs., **2** Knee Swells, Walnut Case, warr'd **6** years, Stool & Book **$98.** New **Pianos,** Stool, Cover & Book, **$122 to $265.** Before you buy be sure to write me. Illustrated Newspaper sent **Free.** Address **DANL. F. BEATTY,** Washington, New Jersey.

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and **Stereopticons** of all kinds and prices.—Views illustrating every subject, for **Public Exhibitions,** etc.—*Profitable business for a man with small capital.* Also, **Lanterns** and **Views** for *Colleges, Schools, Churches, Sunday Schools,* and *Parlor Entertainments.* Send stamp for 74-page illustrated Catalogue.

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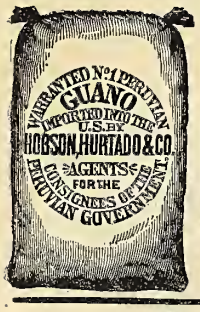

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Farm Implements and Fertilizers.

No. 1 Peruvian Guano; Standard. No. 1 Peruvian, Lobos brand.—**Russel Coe's Superphosphate of Lime.**

Complete Manures, Metropolitan Fertilizer, Pure Ground Bone.

Sold at lowest trade price, by the ton or cargo. Send for 1880 Pamphlet.

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No. 70 Cortlandt Street, New York City.

Soluble

Pacific Guano.

Having taken the General Selling Agency of above Guano, the value of which has already been demonstrated on crops of cotton, corn, tobacco, sugar-cane, wheat, roots, and garden vegetables—the Company's sales having exceeded the enormous aggregate of 40,000 *tons in a single season*—we now offer the same for sale with entire confidence as to its merits. No fertilizer ever introduced in this country has undergone severer tests, or come out of them with its character as a first-class, reliable fertilizer more thoroughly established. In consequence of the satisfactory results of these very complete tests, this Guano has acquired a reputation equal to that formerly enjoyed by Peruvian Guano. It is rich in **Bone Phosphate of Lime,** finely ground (a large proportion of which is immediately soluble), **Ammonia,** and **Potash,** besides other ingredients valuable as plant-food. Soluble Pacific Guano is manufactured at the Company's Works, Woods Holl, Mass., and Charleston, S. C., under the supervision of competent chemists, and none offered for sale is genuine unless having the Company's brand, and the names of John S. Reese & Co., Baltimore, or of the undersigned, branded on each sack. This Guano is offered for sale by our Agents throughout the United States. For further information address

GLIDDEN & CURTIS,
General Selling Agents,
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CHAPMAN & VAN WYCK,

(Established 1849),

DEALERS IN

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Guano

EXCLUSIVELY,
170 Front Street, New York.

MATFIELD FERTILIZER.

This is the only fertilizer containing all the soil elements found in each crop. Analysis will prove **that they contain a larger percentage of plant-food elements** than we claim for them by the labels placed on each package. Six years' experience has conclusively established the above fact. Send for circular. A few good agents wanted. Address

MATFIELD FERTILIZER CO.,
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Peruvian Guano,

imported *direct* from *Peru* by the undersigned, is the

LEADING FERTILIZER

throughout the world, and includes a cheap grade for COTTON. It contains *all* the elements of **Plant-food** in the most

CONCENTRATED, BEST AND CHEAPEST

condition, and is adapted to any

SOIL, CROP, and CLIMATE.

Price Lists and descriptive Pamphlets as to its qualities: Brands under which it is sold, and brief directions for its use, will be sent gratis on application to

HOBSON, HURTADO & CO.,
Agents for the Consignees of the Government of Peru,
No. 63 Pine St., New York.

N. B.—The Bags of all grades bear the firm name of **HOBSON, HURTADO & CO.**

What Farmers Want.

They want Pure Ground Bone! Why—because it contains those elements taken from the soil in the grain and carried away, thus impoverishing the land. Pure Premium Bone, made of dry, hard, unsteamed bones, supplies just this waste, as every farmer can learn by practical experience at a trifling cost. Send for a full explanation of how it works.

Excelsior Fertilizer Co.,
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The New "BOSS" Cultivator

For General Purpose Work. Sold only from Manufactory Address WM PERRY & SON, Bridgeport, Conn., or Canandaigua, N Y., for Illustrated Circular Our Catalogue of many very Valuable New Apples, Pears, Peaches, Quinces, Grapes, and Strawberries, Now Ready. Send for it and form a Club **Discount Liberal.**

Stockbridge Manures.

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Bowker's Phosphates.

LAWN DRESSING.

NEW PAMPHLETS AND CIRCULARS JUST OUT—MAILED FREE. Address

BOWKER FERTILIZER CO.,
43 Chatham St., Boston, Mass.
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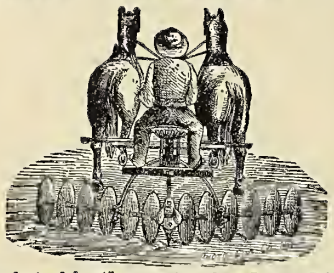
81 Exchange St., Rochester, N. Y.

La Dows Jointed Pulverizing & Smoothing

DISC HARROW.

Light, Simple, Durable & Flexible.



Being jointed in the center, is adapted to both smooth and uneven surfaces. Acknowledged the best of the kind, and will pulverize and cover seed better in one operation, than going over twice with others. Made with both Chilled Metal and Cast Steel Discs polished. Send for circular and price list. Manufactured by

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WIRE CHECK ROWER.

Acknowledged by all farmers to be THE BEST AND ONLY PERFECTLY SUCCESSFUL Wire Check Rower. Will plant FIVE ACRES more a day than any other, as the Wire is not removed from the machine in planting the entire field. Eleven years' use has demonstrated the fact that the only successful way to use a rope or wire line is for the machine to transfer it into position to plant the next row. Do not buy a Wire Check Rower unless the line crosses the machine, as it will last twice as long as a wire run on one side, which must be dragged into position regardless of obstructions met as the planter crosses the field, and which causes friction, inaccurate checking, and breaking of the wire. In our Check Rower the elasticity of the wire and its large curve in passing over the machine, prevents a particle of bending or displacement in the wire, such as occurs in Check Rowers where the line is dragged into the pulley at an angle and high tension, and both bent and displaced as it enters the pulley. Dragging the line into position also causes canting, or lopping, of the planter, by which one row is planted too deep and the other too shallow. Our ROPE CHECK ROWERS are too well and favorably known to call for any extended notice. For full description of our WIRE CHECK ROWER and the three styles of ROPE CHECK ROWERS which we manufacture, write for a circular.

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Improved Baldwin's American Fodder Cutter

The Simplest and Best! Only three Feed Gears! Cuts all kinds of feed, hay, straw, and corn-stalks with ease and rapidity. Power cutters fitted with our **Improved Safety Fly Wheel,** which secures perfect safety to the operator and machine. See large advertisement in Oct. No. of *Agriculturist.* Send for illustrated circular. C. PIERPONT & CO., Manufacturers, New Haven, Ct.

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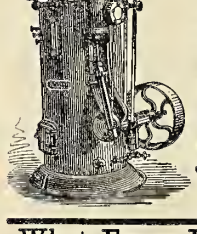
and how to use, is fully illustrated, explained and highly recommended by the "American Agriculturist" in the November Number 1879: Page 465. Send for it. Portable, low priced, worked by man; horse or steam power. Needed by farmers in every county. Good business for Winter or Summer, and very profitable. Can get good wells in earth or rock anywhere. We want the names of men that need wells. Send for illustrated price-list and terms to Agents. Address,

Pierce Well Excavator Co., 29 Rose Street, New York, U. S. A.



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Compact, Substantial, Economical, and Easily managed. Guaranteed to work well and give full power claimed. Engine and Boiler complete, including Governor, Pump, &c., (and boxing), at the low price of

3 Horse-Power...$240.00
4½ " " ... 280.00
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One of McConaughey's Reliable Hand Corn Planters for planting and replanting, in the most practical manner in all kinds of soil. Every machine warranted. Price only $3. Agents wanted

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FERTILIZERS of the Best Guaranteed Qualities.

Send for Special Circular of anything needed in these articles.

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P. O. Box 376. 189 & 191 Water St.,
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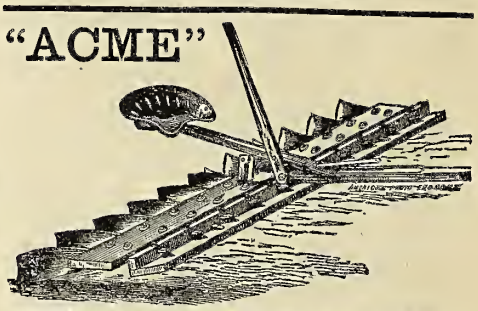

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Has twelve **STEEL** Coulter Teeth and ten STEEL Cutting Spurs. Cuts over six feet wide and two to four inches deep. The only implement combining Pulverizer, Crusher, and Leveler; performs all three operations at one time in the most perfect manner. Works perfectly on light soil, but is *especially adapted to sod and hard clay where other Harrows utterly fail.* Agents wanted. Send for circular.

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Harrisburg, Pa., and 22 College Place, New York.

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Cahoon Broadcast Seed Sower.

For Sowing all kinds of Grain and Grass Seed.

Does as much work as 5 men can do by hand, and BETTER work than can be done by any other means whatever. Agents wanted in every county in the United States. Price $6. Send stamp for circular.

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SOLE MANUFACTURERS.

Delaware Wrought Iron Plow Sulky.

Same Sulky answers for Plowing, Cultivating, and Harrowing. Can use with same any good Implements. Send for Circulars.

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Sole Manufacturers, Delaware, Ohio, 1880.

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Every Machine is guaranteed to give satisfaction, or no pay. Price of Mills, $12; Shellers, $5. Every farmer should have them. Send for illustrated circulars and terms to agents. Address

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CORN AND COB MILLS.

WARRANTED

Superior to any in use for all purposes.

CORN SHELLERS

all sizes.

FEED CUTTERS, Etc.

Satisfaction guaranteed. Send for Circulars and prices.

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Patent Concave Ox-Shoes.

The only forged ox-shoe made with *concavity* to fit hoof, and the best and cheapest.

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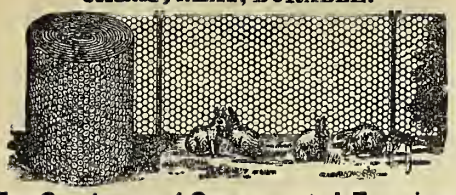
Galvanized Wire Nettings

CHEAP, NEAT, DURABLE.



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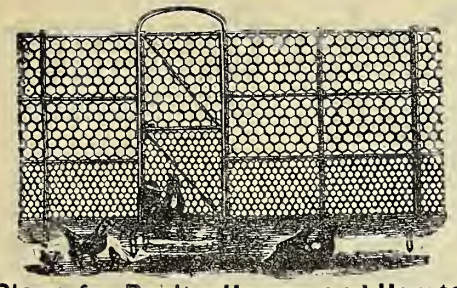

Plans for Poultry Houses and How to arrange Runs, *furnished on application.*

Orders or letters of inquiry will receive prompt attention. Write for Prices. Address **BROCKNER & EVANS,** Manufacturers of Patent Steel-Wire Hay Bands, and Importers of Galvanized Wire Nettings, Wire Goods, etc.,
Mention paper. **422 West St., N. Y. City.**

BROWN LEGHORNS **A SPECIALTY.** Pure as can be had in the country. Eggs $2.00 for 13. Pure-bred Birds, $5 per Trio. GEO. SCOTT, Springfield, N. J.

EGGS FOR HATCHING from P. Cochins, Plymouth Rocks, Houdans, Golden Penciled Hamburgs, W. and Brown Leghorns, Black-breasted Red Games, and Pekin Ducks, at $3.00 for 26 eggs. Also White Prolific Seed Corn, at $2.00 per bu. A. S. BEEKMAN, South Branch, N. J.

EGGS FOR HATCHING. 5 Varieties Fancy Poultry. Prices reasonable. **CHAS. FELDMAN, Martinsburg, W. Va.**

NEW JERSEY CENTRAL STOCK FARM AND POULTRY YARDS, Somerville, N. J., H. C. Van Derveer & Son, Proprietors. H. R. Jersey Cattle, Poland-China, Jersey-Red, Berkshire and Yorkshire Swine; Cotswold and Southdown Sheep; Bronze, Naragansetts and White Holland Turkeys; Bremen and Toulouse Geese. All the leading varieties of land and water fowls.

EGGS For Hatching.—W. F. B. Spanish and B. B. R. Games. Finest strains in America. Send stamp for circular. Louis Anderson, Flemington, N. J.

New England Stock and Poultry Farm.

Plymouth Rocks and White African Bantams, Rathbun's Strain P. Rocks acknowledged the best layers in the world. My 42 breeding hens, during the past year, produced 10,500 eggs, and nine years' experience in this popular meritorious fowl gives me a fair estimation that they are unsurpassed for all purposes. Eggs for hatching from both breeds, $1.50 per 13, $2.00 per 26, $3.00 per 40, $4.00 per 52, $5.00 per 75 and $6.00 per 100, all carefully packed and warranted fresh. Re it money through P. O. order or registered letter. J. H. RATHBUN, Box, 728. Conn.

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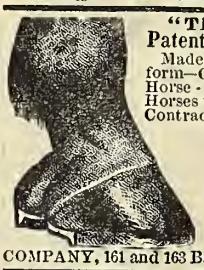

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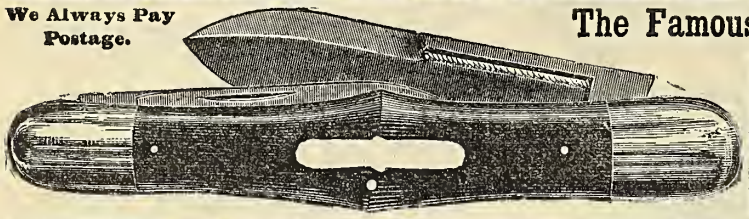

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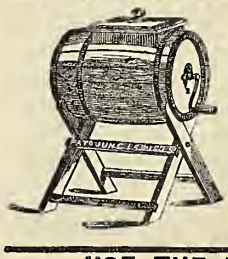

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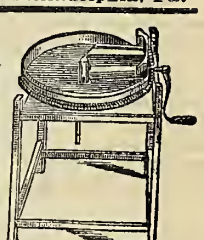

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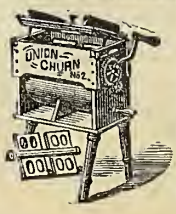

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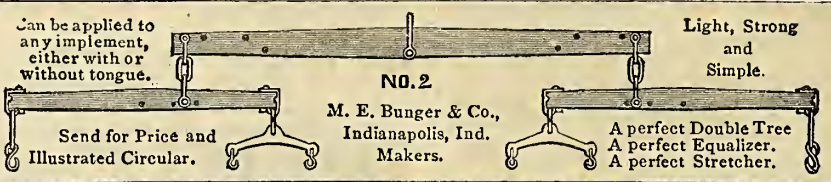

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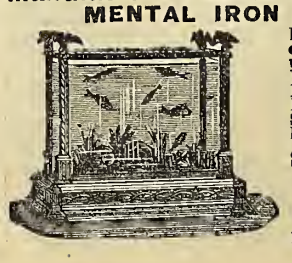

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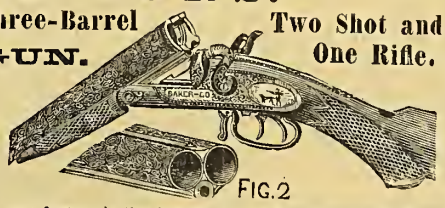

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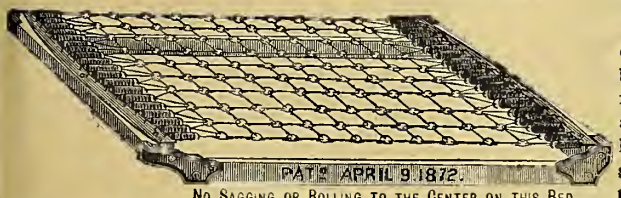

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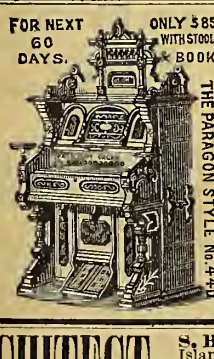

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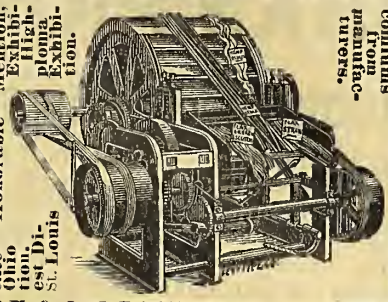

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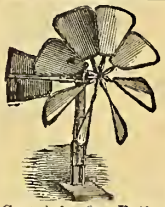

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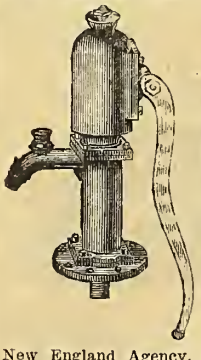

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J. Howard Rushmore, *Secretary.* P. O. Address, Old Westbury, Queens Co., L. I.

QUEENS COUNTY *Agricultural Society,* (GROUNDS AT MINEOLA.)

DIRECTORS. SAMUEL S. AYMAR, JOHN E. BACKUS, S. NELSON WHITE, GEORGE S. DOWNING, GEORGE W. BERGEN.

Old Westbury, L. I. June 17th 1879

J. R. McFarland Esq.
Dear Sir
I append Correct Copy of Official Record of Trial of Mowing Machines in June last
Resp'y J. Howard Rushmore

		Draft
Eureka	6 ft cut	222
Buckeye	4 " "	218
Whitney Wood	4.3 "	197
Walter A. Wood	4.3 "	202½
Champion Front Cut	4.3 "	182½
" Rear "	3.10½ "	172½
Warrior	3.10½ "	155

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And Fully Endorsed by the Best Expert Authority, after the Most Thorough Tests, as to its Capacity and Execution,

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Fifty-Third Semi-Annual Statement,

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Reserve for Unpaid Losses, -	248,764 81
Net Surplus, - - - - -	1,320,785 30
CASH ASSETS, - -	$6,410,988 11

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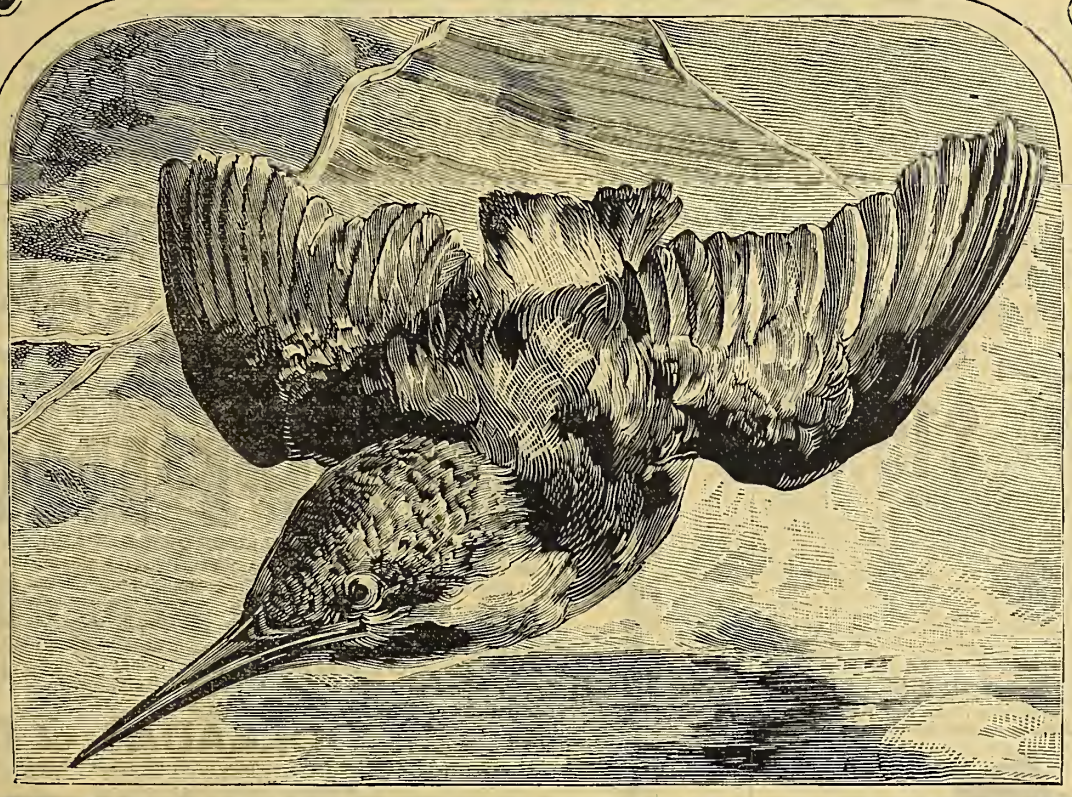
FOR THE FARM, GARDEN & HOUSEHOLD.



VOL. XXXIX. NUMBER 4.

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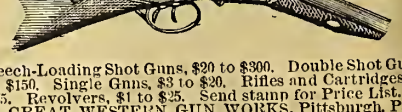

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VOLUME XXXIX.—No. 4. NEW YORK, APRIL, 1880. NEW SERIES—No. 399.

CLEARING UP A FARM.—DRAWN BY R. E. ROBINSON.—*Engraved for the American Agriculturist.*

The history of the first century of the settlement of this country is one of forest-felling and land-clearing. The labors, trials, and hardships of those who in early days engaged in a struggle with the wilderness can only be appreciated by those who have made or are now making for themselves and their families a home in the wild, wooded regions still unoccupied. To go into the woods and "clear up" a farm is no easy task; and the scene which is presented in the engraving will carry the thoughts of many of our middle aged readers back to the days of the hardest work of their lives, but days that were bright in the hopes of future comfort and prosperity. Before the corn and wheat could grow, or the green pasture furnish food for the stock in summer, and the meadow its burden of hay for the winter, the trees must be felled, the tangled brush be burned, the virgin soil broken, and the seed sown in the rough, but rich and willing ground. All this demanded toil, and toil of the most severe kind. But what changes were wrought! Every tree brought down opened a new space on the ground below, and a new inlet for the sunlight above; every stump or every stroke of the axe was an encouragement for the next. Look now at the aggregate results of this labor. A wild, savage country transformed into a peaceful, prosperous land of plenty. In some cases the change was slow, and several years elapsed before the land was thoroughly subdued to cultivation; but often the transformation has been so sudden as to almost make one doubt his senses. In the space of a few short months the unbroken forest, known only to the Indian in pursuit of his game, was changed into open fields of waving grain. The wonderful story of the changes that accompanied the progress of the settlement of our forest regions, seems like fiction to him who has always lived in a long settled or prairie country. But to one who returns after a few years absence from the forest-side home of his boyhood days, the change is real. The woods have been swept away as by a whirlwind, and the picture that he has long held so dear in his memory, no longer exists in reality. The land has been "cleared up" and even the stumps of the old trees have yielded to slow decay or the more rapid blasting dynamite, and the mower and reaper run smoothly over the ground. Year by year the "wood lots" have been narrowed in, until they are now in many cases too small to furnish the proper protection from stormy winds to the wide open stretches of country, or against other sudden, violent meteorological changes. The desire to get all the acres into grain and grass has been too strong, and the results are not to the country's advantage. We may from necessity be called upon to restore, by the slow process of plant-growth what has been destroyed as by fire.

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Bee Plants.—"J. F. Z.," Isanti Co., Minn. But little has been done in this country in the way of growing plants expressly to furnish pasturage to bees. One of the strongest claims that bee-keeping has upon farmers is, that it utilizes that which would otherwise go to waste. To devote land and the labor of raising plants to the bees would put the business upon a very different footing, whether it would be profitable or not remains to be tested. In a conversation with the late Mr. Quinby on this subject, he stated that the plant which seemed to him the most promising for cultivation was the common Catnip. This is a perennial, and a field once stocked would remain for several years; it blooms in summer when other honey-flowers are scarce, and it is said that the product is very white and of great delicacy of flavor.

Calendar for April, 1880.

Day of Month.	Day of Week.	Boston, N'England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Mo'n rises.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Mo'n rises.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Mo'n rises.
		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	T	5 42	6 26	0 53	5 43	6 25	0 47	5 44	6 23	0 41
2	F	5 41	6 27	1 42	5 42	6 26	1 37	5 43	6 24	1 33
3	S	5 39	6 28	2 24	5 40	6 27	2 19	5 41	6 25	2 14
4	S	5 37	6 29	2 56	5 38	6 28	2 53	5 40	6 26	2 49
5	M	5 35	6 30	3 25	5 37	6 29	3 23	5 38	6 27	3 21
6	T	5 34	6 31	3 50	5 35	6 30	3 49	5 37	6 28	3 49
7	W	5 32	6 32	4 14	5 34	6 31	4 14	5 35	6 29	4 16
8	T	5 30	6 33	4 38	5 32	6 32	4 39	5 34	6 30	4 41
9	F	5 29	6 35	sets	5 30	6 33	sets	5 32	6 31	sets
10	S	5 27	6 36	8 5	5 29	6 34	8 2	5 31	6 32	7 58
11	S	5 25	6 37	9 8	5 27	6 35	9 3	5 29	6 33	8 58
12	M	5 24	6 38	10 6	5 26	6 36	10 1	5 28	6 34	9 55
13	T	5 22	6 39	11 1	5 24	6 37	11 55	5 26	6 35	10 49
14	W	5 20	6 40	11 49	5 23	6 38	11 44	5 25	6 36	11 38
15	T	5 19	6 41	morn	5 21	6 39	morn	5 23	6 37	morn
16	F	5 17	6 42	0 32	5 19	6 40	0 27	5 22	6 38	0 21
17	S	5 16	6 44	1 9	5 18	6 41	1 4	5 20	6 39	1 0
18	S	5 14	6 45	1 40	5 16	6 42	1 37	5 19	6 40	1 33
19	M	5 12	6 46	2 9	5 15	6 43	2 6	5 18	6 41	2 4
20	T	5 11	6 47	2 35	5 13	6 44	2 34	5 16	6 42	2 32
21	W	5 9	6 48	3 0	5 12	6 45	3 0	5 15	6 42	3 0
22	T	5 8	6 49	3 25	5 11	6 46	3 37	5 13	6 43	3 28
23	F	5 6	6 50	3 53	5 9	6 47	3 55	5 12	6 44	3 58
24	S	5 5	6 51	rises	5 8	6 48	rises	5 11	6 45	rises
25	S	5 3	6 52	8 21	5 6	6 49	8 16	5 9	6 46	8 11
26	M	5 2	6 54	9 35	5 5	6 51	9 30	5 7	6 47	9 24
27	T	5 0	6 55	10 42	5 4	6 52	10 36	5 6	6 48	10 30
28	W	4 59	6 56	11 37	5 2	6 53	11 32	5 5	6 49	11 26
29	T	4 58	6 57	morn	5 1	6 54	morn	5 4	6 50	morn
30	F	4 56	6 58	0 22	5 0	6 55	0 18	5 3	6 51	0 14

PHASES OF THE MOON.

MOON.	BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	D. H. M.	H. M.	H. M.	H. M.	H. M.
3d Quart.	2 1 29 mo.	1 17 mo.	1 5 mo	0 53 mo.	0 23 mo.
New M'n	9 10 23 mo.	10 11 mo.	9 59 mo	9 47 mo.	9 17 mo.
1st Quart	17 2 30 ev.	2 18 ev.	2 6 ev.	1 54 ev	1 24 ev.
Full M'n	24 6 6 ev.	5 54 ev.	5 42 ev.	5 30 ev	5 0 ev.

AMERICAN AGRICULTURIST.

NEW YORK, APRIL, 1880.

Hints for the Work of the Month.

[*The Hints and Suggestions in these columns are never copied from previous years, but are freshly prepared for every month, from the latest experience and observations, by practical men in each department.*]

Spring work comes without hurry to the farmer who is prepared. Much of the mischief laid to unfavorable seasons rightly belongs to a laggard beginning. A well started crop rarely fails to be satisfactory in spite of weather, and a late one is rarely so.

Early Planting and Sowing.—With the soil well prepared, early sowing is most desirable with many crops. Some tender ones make a poor start unless the ground is warmed by the sun and air, and a late frost *may* do harm. But it is rarely wise to delay because of what *may* happen, when promptness promises the best results.

The Condition of the Soil is always to be taken into account. Fields that are drained, either naturally or artificially, may be safely sown when a wet soil cannot be. Wet soils are cold. Some deny this, on the ground that the water is as warm as the soil, and has no refrigerating effect. But it is the circulation of air in the soil that warms it, and if it is so filled with water that air cannot enter, it remains cold, until the water has evaporated.

The First Crop to be Sown, is spring wheat, then oats; after these come beets and potatoes. Wherever spring wheat will succeed it is a desirable crop, even when sown in April. Out of its natural district, which is marked out by peculiarity of climate more than any other condition, it is of no use to sow it, unless in a small way to experiment with new varieties of unusual promise.

Barley.—A fine condition of the soil is indispensable for this crop. Old barley growers know all about this, but many want to grow barley because it is a profitable crop when successful. It will succeed in any good, well prepared soil, but a mellow clay loam which can be brought to good tilth is to be preferred. But good crops of bright grain may be grown on lighter loams if in good heart. It may be made an excellent soiling crop to follow clover, and as a change from oats. We prefer to sow thickly, say 2½ bushels per acre, but opinions vary in this respect, and from 1½ to 2½ bushels is the range.

Oats.—Early sown oats in our hot climate are, as a rule, better than the late sown. Our climate is not so favorable for oats as the cooler northern and northeastern ones. There oats are heavy and plump, and seed from Canada, Nova Scotia, and New Brunswick will produce well for two or three years. By using seed from these northern localities, oats may be grown in the Middle States weighing from 35 to 45 lbs. per bushel.

Flax.—It is supposed that flax is a "hard" crop on land. It is true in one sense, but it will not injure a cool, moist soil that has a fair proportion of vegetable matter in it. It has been grown with oats and threshed for feeding, and there are few more profitable crops than this mixed one. A large demand is springing up for both seed and fibre. Mills are becoming numerous. But it should not be lost sight of that mills will not come until there is some material to be worked up, and if the farmers of any locality wish for a factory near them, they must first grow the needed material. It is fortunate that flax can be grown for feed, and even the straw used for fodder when mixed with oats, so that a good foundation may be laid for a supply for flax mills. The same is true of

Sugar Beets.—After many years of trial and failures, the manufacture of beet sugar promises to become successful. It depends wholly on the farmers. To retain in our midst the millions of dollars sent abroad for sugar, is desirable. The Portland, Me., Sugar Factory Company, after several seasons of work, still perseveres in inducing the Maine farmers to produce roots, and is sanguine of success. Beets can be grown profitably if a determined attempt is made. Let but one acre, or less, be planted and well tended, and as soon as that can be grown successfully, 10 acres may be.

Plant Early.—Beets need to be put in very early. The seed should go in the ground immediately after the last harrowing, and if the seed be soaked to ensure quick germination, the young plants will get a start of the weeds. The writer's practice has been to do this with all kinds of roots, and as soon as the green line of the plants can be seen, to run down the rows with a hand cultivator that cuts on both sides of each row, and stirs the ground within an inch of the small seedlings. By keeping the plants cultivated in this way the middles may be left without harm for some time, as the rows are kept distinct, and can be readily seen when the horse hoe is used.

Plant by Hand.—Steeped seed cannot well be sown by a machine; by steeping, the quality of the seed is discovered. A light furrow may be made and the seed dropped in it so closely as to consume 6 or 8 lbs. of seed per acre. The rows may be covered by the hoe or by a roller run over the ground across the rows.

Fertilizers.—No other crop requires a more vigorous start than roots. A liberal application, at planting, of artificial fertilizer, Peruvian guano or special root manure being preferable, will go a great way to ensure success. It is well to scatter the root manure along the rows as they are opened, drop the seed and then cover. This prevents too close contact of seed and fertilizer which is often dangerous. Guano needs to be more thoroughly mixed with the soil.

Corn.—This is one of those crops which require a warm soil and which suffer from a late frost. But the ground may be prepared in season to help on the planting afterwards. As good a crop may be grown on stubble as on sod if the right method is followed; and this is simply to give sufficient manure and thorough cultivation. 100 *bushels per acre* may be produced, and this means double or treble pay for the same labor. Far larger crops than this have been grown, and of late years, thanks to the general diffusion of scientific knowledge through the best of the agricultural journals, the average yield of this grain has been doubled. A yield of 75 or 80 bushels is now secured where 30 or 40 bushels used to satisfy farmers. The use of fertilizers and good methods of cultivation have effected this; but the same means may be made available for even larger yields, and one should never stay satisfied with a large crop, but try for

still greater ones. The time of planting of course varies with the latitude, and these remarks apply when corn-planting is in season.

Grass.—With a doubled yield of corn and productive crops of roots, more land can be laid down to grass. The cheapest and the most essential product of the soil is grass. The better the system of agriculture the better will be the grass produced. Orchard grass for dry soils, and Red-top for low land are now thought more of than heretofore. A study of the character and value of the best grasses and their cultivation and protection is now of great importance. "Flint's Grasses and Forage Crops" is a useful book for this purpose.

Seeding to Clover.—Clover seed sown this month will do well in many localities, if scattered upon ground previously harrowed with a smoothing harrow, which passes over the grain without injury, and fertilized with a light top-dressing of fertilizer.

Soiling Crops.—The first cutting of green fodder is winter rye, that which is first cut will make a second growth that can be cut in June. An early sowing of oats, oats and peas, or oats and barley, should be made this month for cutting after clover. Soiling crops are sown in succession weekly, so as to have succulent fodder continuously.

Potatoes.—As the old favorites, the Peach Blow, Mercer, and others, gradually failed and run out, so our newer favorite, Early Rose, seems doomed, as a field crop. Unfortunately we cannot as yet lay our hands upon a perfect substitute. Some promising new varieties are offered which are worthy of trial. One of them is mentioned on page 148. As a rule seed procured from a northern locality yields better than home grown seed.

Live Stock.—The coat is now changed and good brushing or carding helps the shedding of the hair by stimulating the skin.

Medicines are to be avoided as a rule, excepting in extreme cases. "Spring physicing" is an old notion which should rest with our ancestors. If due attention has been given to feeding and general care, stock will come out in good order after their season of dry feeding and confinement

Horses.—When hard work commences, dry food will be needed. It hardens the muscles and prevents excessive perspiration. The skin, tender from long rest, is easily chafed and galled. Cold water and Veterinary Cosmoline will keep galls in check and heal raw spots. Clean, soft harness, prevents galls. Shoes that have been long on ought to be removed, and in paring the hoof let no knife touch the frog. It will wear away fast enough.

Cows.—Garget and abortion trouble the dairymen. We believe in prevention. The former may surely be prevented by due care. As soon as the udder contains milk, it should be relieved by drawing off a part of it, if there is any tendency to hardness. These diseases are often a consequence of weakness. A fat animal may be weak for want of food. When a cow's time approaches and the feed is suddenly reduced, disturbance of the system is caused. Circulation becomes irregular, and congestion occurs in the most susceptible organs. The udder is the principal one of these at this period, and an attack of garget is very sure to occur. This may not always be so, but long experience and observation convinces us that it generally is. The remedy is obvious.

Sheep and Lambs.—As lambs grow and thrive, ewes suffer. All the growth of the lamb comes from the ewe. The suggestion should carry its own moral, viz., *feed the ewe.* There is no food so nourishing for a lamb as the dam's milk, and plenty of it produces the finest lambs. Cow's milk may do for a store lamb, but not for a market lamb. Ticks will become troublesome and fret the flock. The use of a strong decoction of Tobacco will destroy these pests.

Swine.—Corn is high, but so is freight, and as 800 lbs. of corn may be carried in a pork barrel, it is a question if it will not pay to feed 50 cent corn to 4 cent pigs. Every bushel of corn fed relieves the market of a surplus, and makes the remainder more salable. This is to be considered. Also the fact that there is *a* kind of pig that may be fed the most profitably and that one kind is the one to discover and choose. Hereafter farmers will *save* their profits in all probability, just as is done in other manufacturing business. Animals are living farm machines.

Poultry.—Vermin run riot among the poultry and many poor fowls die of diseases caused by the constant worriment of lice and fleas. As the weather grows warm this is to be looked after, and the flock freed from the pests. Free use of kerosene oil or crude petroleum, about the roosts and crevices of the nests, and clean earth in the runs and houses will effect a deliverance.

Machinery.—After the winter's rest an overhauling of the machines will be proper. Dust and rust should be cleaned off, and oil and tallow used liberally. It should be understood that there is more wear from rust than from use, with farm machinery.

Notes on Orchard and Garden Work.

Orchard and Nursery.

Whoever sets out an orchard of course does it with the expectation of a return in fruit. No one plants corn or potatoes without first considering if the land will give him a crop; if the soil is not in the proper condition he knows that he must make it so, or lose his seed and his labor. Much less than corn and potatoes can fruit trees make a crop on nothing. The trees will struggle along, do the best they can, but such orchards do not pay, and "run out" early. Unless the land is sufficiently fertile for an ordinary farm crop, it should be made so; no soil too wet for such crops will answer for fruit trees, which, to succeed, need well drained land. The plowing should be as deep as the character of the soil will allow, and the sub-soil plow may generally follow the other with benefit.

The Trees.—It is assumed that trees were ordered some time ago; they should be at hand ready for planting. It is the custom at nurseries to take up and heel-in a large stock of the kinds of trees most called for, this retards the growth, and allows them to fill late orders. If there is a nursery near at hand it will pay to make a bargain, if possible, to help dig the trees yourself, and thus secure a larger share of the roots that belong to them. If trees, in a long journey, become dry and shriveled, bury them, root and branch, in mellow earth for a few days, when they become plump again. In unpacking the trees, look to the labels, as some may become detached and would otherwise be lost.

Laying Out.—In staking out the ground take care to have the trees in true rows. Put all of the same variety together, and if there are many kinds make a planting chart showing the position of each.

Preparing the Trees.—Everybody wishes to get all he can for the money, and the nurserymen send much larger tops to the trees than the pruned roots in their new positions can support. It is safe to shorten the branches one-third or one-half, but it should be done with judgment and reference to the condition of the roots. At the same time pare smooth any broken or mangled roots.

Planting.—In setting a tree take time to do it properly; spread the roots evenly and to their full length, and so work in the soil among them that there will be no hollow places. Water may be used to carry the soil among the roots—not dashed in by the pailful, but showered from a watering-pot. Do not stamp the soil down around the roots, but firm it carefully with the foot. The tree should be set no deeper than it stood in the nursery.

Crops.—The soil of a young orchard may be kept in cultivation until the trees begin to bear; grain should never be grown, except Indian corn, but potatoes and root-crops are the best.

Grafting.—A tree that is of a poor or worthless sort should be renovated by grafting. This can be done this month; for full particulars with illustrations of the process see the February number.

Cions should have been cut early, but may be secured until the buds start. Many nurserymen cut a stock of cions of all the leading varieties in advance, and can supply them by mail or otherwise.

Root-Grafts.—Those who would start an orchard at a very small outlay, can begin with root-grafts. These are roots in which grafts are set; the work is done in the winter and the grafted roots kept in boxes of earth until they can be set out in spring. Many nurserymen offer these for sale, and they are the cheapest form in which trees can be bought. They are to be set 2 feet apart, in rows distant enough to work with a cultivator, and put in with a dibble so deep that only the top bud is above ground. Keep them well cultivated, and 90 per cent, or more, should be thrifty young trees in autumn. In 2 or 4 years, according to the variety, they will be large enough to set in the orchard.

Insects.—Destroy the eggs of the Tent Caterpillar, which are to be found in small closely fitting rings or bands near the ends of the smaller twigs, and may be cut away. Many insects harbor beneath the loose bark of trees, and by scraping this off and washing the trunk and limbs with a solution of soft soap, much good may be done. To prevent the ascent of the wingless females of the Canker Worm, use heavy brown paper bound closely around the tree's trunk, and then smear with cheap printer's ink or tar. The bands will have to be re-coated at frequent intervals through the season.

Fruit Garden.

Those having the planting of small fruits still to do, will find hints in last month's Notes.

Currants and Gooseberries.—Prune at once any that have been omitted; abundant manuring and mulching will increase the size of the crop and the fruit. So soon as the leaves are of much size the "worms" may be expected. Examine the under surface of the lower leaves for the eggs, and destroy all that are found. When holes are seen in the leaves apply White Hellebore, either sprinkled dry or mixed in water, a tablespoonful or so to a pailful of water. It is better to first scald the Hellebore with a little boiling water before adding it to the pail containing the cold water. Keep stirred.

Strawberries receive treatment on page 149.

Grapes.—Vines can still be planted and should be set out by all who have a spare corner on the place, as along a fence, or by the side of a shed. Under ordinary care a few vines will give an abundance of nice fruit in its season, and every farmer should feel that he has a place for a few grape vines. See the article on page 149.

Kitchen and Market Garden.

Cold Frames.—The plants from these are to be set out so soon as the soil is ready, and the sashes used on other frames to push forward a crop of lettuce, which latter, when out of the way, is to be followed by cucumbers—thus making the most out of the investment in glass. At this season the frames should have an abundance of fresh air, and while generally open during the day, they must be shut at night and in cold days.

Window Boxes may be placed out of doors on warm days to harden off plants; they may be left out overnight when not cold enough to chill them.

Sowing Seeds.—The plants of the vegetable garden are divided into two general classes, *hardy* and *tender.* For a list of each and their treatment, see last month's Notes.

A Marker can be easily made from a piece of scantling for the head piece into which the handles and pegs are fastened. The pegs may be 9 inches apart on one side and 12 on the other. A line is used as a guide in making the first rows, after which, by allowing the outside peg to run in an old mark, all the rows may be straight.

Greens were so fully treated last month, page 104, that it need only be referred to here.

Asparagus.—The old ideas about the elaborate preparation for an asparagus bed are out of date; it is as easy to make a bed for asparagus as almost any other plant, and nothing pays any better for the little trouble. Set the new beds so soon as the plants can be had, giving it a generous manuring, and putting the crowns about four inches below the surface. Rows 2 feet apart, with a foot between the plants, is a good distance for the family garden, but if room can be spared the distance may be increased. Let the plants grow until the third year

before cutting. The coarse litter should be raked from the old bed, to make it smooth and clean, before the stems begin to come through the ground.

Early Potatoes should be put into the ground at the earliest possible date. When started in boxes they may be greatly hastened ; in planting take care that the tender sprouts are not broken off. The soil should be light and warm for early potatoes.

Sweet Potatoes.—The time for setting in the latitude of New York City is about June 1st, and the roots should be put in the hot-beds for starting at least six weeks previous to this. The soil of the hot-bed need not be rich, but light and loose, and well warmed. Nothing is gained by putting this sub-tropical plant in open ground until it is warm.

Cabbages.—Sow seeds in hot beds for medium crop; the plants from the cold frame will supply the early crop.

Corn is one of the *tender* plants, and should not be put in the ground until there is settled weather and warm soil for it. "Corn-planting time" varies with the locality, and good judgment must decide.

Peas.—See "Peas in Plenty," in the March number. Sow "Daniel O'Rourke" and "Alpha" for early, and the "Champion of England" for late ; the "Champiou" needs tall brush to do its best.

Succession Crops.—Beets, Radishes, Peas, etc., should be sown at intervals of two weeks or so, that there may be a succession of fresh "pickings" or "pullings" through the season.

Odds and Ends.—Try a few *new* varieties for the pleasure and possible profit that they may bring; but do not go into novelties largely....Keep the garden perfectly clean of weeds at the start as a weapon in the struggle against the enemy. Nothing does better execution than a heavy rake with long, sharp teeth, but it must be nsed early and often. Weeds that can not be killed by this are all too large.

Flower Garden and Lawn.

Under this heading are included the various hints for the ornamentation of the grounds around the house—the *front yard* as it is generally called—with its trees, shrubs, beds, and paths, and above all the

Lawn.—Nothing is more pleasing than an expanse of smooth, rich, green, nicely kept grass. The lawn should be one of the features of every pleasure ground, no matter how limited in extent, and in laying out the walks and drives they should not divide the lawn more than can be helped. In making a lawn the soil should be first thoroughly manured after which, for heavy soils, Kentucky Blue Grass seed should be sown in abundance; for light soils Red-Top is best. It is well to sow the seed in two or more directions, thus securing a more even distribution, and therefore a better turf.

Walk and Drives.—As far as possible in laying out walks let them take a direction that all will be inclined to follow, that there may be no cross-cut "sheep-paths." The walks will need to be raked, smoothed and rolled. In constructing new ones and drives make a solid foundation of coarse stones with smaller ones above. Thoroughness in the making of a walk or drive will always pay. A good walk is a comfort while a poor one is always a source of annoyance to the owner and all others.

Trees.—The tendency is to plant too thickly. Young trees make but little showing at first, and over-planting is natural. For the health of the family no trees should be planted so close to the house as to exclude the light and sunshine. In planting do not copy a neighbor and thus create sameness. Do not plant large forest trees in a small yard, but select those of medium size, and attractive for flowers as well as foliage. The varieties are almost innumerable ; and those from our own woods and thickets are, many times, as good as the best.

Shrubs planted in clumps are very useful in concealing boundary lines and giving a pleasing effect to the grounds. A well formed shrub standing alone is often very beautiful.

Annuals.—All hardy annuals, Rocket Larkspurs, Stocks, Pansies, and the like are to be sown as soon as the beds can be made ready. The tender ones, snch as Balsams, China Asters, etc., may be sown in hot-bed or window-boxes.

Hardy Perennials.—Old clumps are to be taken up and divided, and it is better to reset in fresh soil.

Greenhouse and Window Plants.

At this season the plants indoors are apt to be neglected from the press of work outside, and at just the time when they demand special care. The change of the season with its increase of heat makes the insects more abundant, and vigilance now is the price of clean plants through the summer.

Shade will now be required by some plants, and it can be provided by coating the glass with lime-wash, adding to the thickness as the heat increases.

Hardening off, or the tempering of the house-grown plants to the open air must be gradual.

Summer Bloom.—The greenhouse should not be stripped but made attractive through the season by blooming plants like Gesnerias, Fuchsias, etc. ; sow Balsams and other annuals for pot culture.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our record kept daily during the year, show at a glance the transactions *for the month ending March 10th*, 1880, and for the corresponding period last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats
24 d's *this* m'th	368,000	1,251,000	2,137,000	41,000	409,000	896,000
24 d's *last* m'th	453,000	1,715,000	1,904,000	34,000	289,000	1,054,000
SALES.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
24 d's *this* m'th	305,000	24,100,000*	4,113,000*	285,000	194,000	1,814,000*
24 d's *last* m'th	321,000	23,226,000*	3,807,000*	118,000	237,000	1,019,000*

* Including sales for forward delivery.

2. *Comparison with same period at this time last year.*

RECEIPTS.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
24 days 1880	368,000	1,251,000	2,137,000	4 .000	409,000	896,000
23 days 1879	359,000	3,215,000	2,119,000	97,000	226,000	409,000
SALES.	Flour.	Wheat.	Corn	Rye.	Barley.	Oats.
24 days 1880	305,000	24,100,000	4,113,000	285,000	194,000	1,314,000
23 days 1879	378,000	8,103,000	4,207,000	372,000	263,000	1,093,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	Corn. bush.	Rye. bush.	Barley. bush.	Oats. bush.	Malt. bush
Mar. 9,1880	4,441,800	256,400	173,050	456,700	186,650	131,450
Mar.10,1879	3,029,051	1,363,672	416,078	696,625	600,750	52,853
Mar.11,1878	1,639,371	460,454	114,200	660,145	1,090,851	275,705
Mar.12,1877	2,646,237	1,517,208	284,607	475,671	769,451	327.659

4. *Exports from New York, Jan. 1 to March 10.*

	Flour. bbls.	Wheat. bush.	Corn. bush.	Rye. bush.	Barley. bush.	Oats. bush.	Peas. bush.
1880	701,000	5,227,000	4,805,000	358.000	127,000	29,000	71,000
1879	563,000	6,981.000	5,793,000	712.000	37,217	38,500	101,000
1878	475,400	7,483,409	2.776,780	339,829	621,599	37,847	55,550
1877	254,958	1,576,839	2,078,553	164,389	95,457	29.338	124,827
1876	357,715	1,910,068	2,630,925	15,387	——	46,266	198,153

Since our last Review, Stock Exchange operations have been on a liberal scale, and prices of nearly all classes of securities have been on the advance, though, under a more urgent demand for accommodation, Money has been ruling higher on call, and in the discount line. Real Estate has been gaining in favor, steadily, and, nnder increasing purchases, the tendency of values has been upward. Dry Goods, Boots and Shoes, and Hardware have heen quite active, and generally strong in pricc. Drugs, Dyes, Chemicals, Naval Stores, Petroleum, Tobacco, Rice, Hemp, Fish, Hops, Coffee, and Teas, have been moderately sought after, and have been variable, thongh the changes, in most instances, have been unimportant. ....Hay and Straw have been less freely dealt in, and closed rather easier. Metals have been less active, and quoted lower, and somewhat nnsettled.....Hides have been attracting more attention, leaving off stronger. Leather has further receded in price, on more liberal offerings, leading to incrcased activity.....Sngar and Molasses have been advanced, on reduced supplies, and a livelier trade inqniry.....A comparatively brisk business has been reported in Cotton. chiefly in the speculative line, at, however, irregnlar figures.....More demands have been reported for Seeds, especially for Clover, which has been wanted by the home-trade, and has been quoted firmer.....Wool has been in materially reduced stock, and active reqnest at hardening prices. London Public Sale results favorable tc holders.,... A fair degree of animation has been apparent in Provisions, which have fluctuated considerahly in price, leaving off more steadily..... In the Breadstuff line, husiness has bcen generally quite brisk for the season—notably so in Grain, largely on speculative account, at very variable figures—Flour, Wheat, and Oats closing depressed, lower, and irregular; Corn, for early delivery, cheaper ; Rye and Barley about stcady. Export purchases of Flour have been recently on a limited scale. Wheat has been taken to a fair aggregate by shippers—particularly No. 2 Red, and No. 1 White—thc favorites are the Winter grades, but the latest dcalings indicated a downward tendency, as influenced by the favorable crop and weather reports, the adverse tenor of the foreign markets by cable, and the more urgent offerings. Spring Wheat, as having been in light stock and under strong control. has suffered least, but has been without much life as to actual trading. Buckwheat has been taken to the extent of about 5,000 bushels for shipment—mainly to Antwerp—at from 55c. @60c., closing at 55c. per bushel. These export purchases were the first reported in our markct, and were more or less experimental. About 75 tons went to Bristol, chiefly to be there sold for feeding purposes—partly, it has been stated, for Pheasants. The home trade in Buckwheat and Buckwheat Flour is abont closed for the season, which, in this connection, has not been deemed a satisfactory one. The stocks of grain in store in New York harbor are diminishing rapidly. The visible supplies of Wheat,—embracing the hoards at lake ports. in transit, and on the seaboard—at latest dates, embraced about 28,035.000 bushels ;—of Corn, 15,621,200 bushels ; of Rye, 900,000 bushels ; of Barley, 3.687,200 bushels, and of Oats, 2,909,700 bushels, against on January 31, an aggregate of 30,100,000 bushels Wheat, 13,100,000 bushels Corn, 979,000 bushels Rye, 4,155,000 bushels Barley, and 3,080,000 bushels Oats. Ocean grain freights have rallied perceptibly and more active, business closing by steam to Liverpool, 5*d.* per bushel ; to Bristol, by steam, to 5@5½*d.* per bushel ; to Antwerp, by steam, to 6@6½*d.* per bushel, and by sail to Cork, for orders, 4*s.* per quarter of 480 lbs.

CURRENT WHOLESALE PRICES.

	Feb. 10.	Mar. 13.
FLOUR—Super to Extra State	$4 60 @ 5 57	$4 65 @ 5 75
" Super to Extra South'n.	4 60 @ 8 25	4 65 @ 8 25
" Extra Genesee	5 75 @ 7 00	5 75 @ 7 00
" Superfine Western	4 60 @ 5 25	4 65 @ 5 30
" Extra Western	5 25 @ 9 00	5 30 @ 9 00
" " Minnesota	5 50 @ 8 75	5 50 @ 9 00
BUCKWHEAT FLOUR, ℔ 100 lbs	1 60 @ 1 90	1 30 @ 1 75
BUCKWHEAT, per bush	60 @ 62	55 @ —
RYE FLOUR, Superfine	4 60 @ 5 00	4 70 @ 5 15
CORN-MEAL.	2 60 @ 3 35	2 50 @ 3 30
CORN-FLOUR, per bbl	4 00 @ 4 50	3 75 @ 4 50
OAT MEAL, ℔ bbl	4 75 @ 7 25	5 00 @ 7 00
WHEAT—All kinds of White.	1 35 @ 1 46	1 35 @ 1 45
" Red and Amber	1 20 @ 1 47½	1 15 @ 1 46
" Spring	1 20 @ 1 40	1 20 @ 1 45
CORN—Yellow	58 @ 67	60 @ 68
" White	58 @ 67	61 @ 68
" Mixed	56 @ 61½	59 @ 65
OATS	46½@ 53	46 @ 54
RYE	93 @ 95	93 @ 97½
BARLEY	55 @ 1 05	55 @ 1 05
HAY—Bale, ℔ 100 lbs	65 @ 90	65 @ 95
STRAW, ℔ 100 lbs	45 @ 1 05	45 @ 1 00
COTTON—Middlings, ℔ lb	13 @ 13⅝	13⅛@ 13¼
HOPS—Crop of 1879, ℔ lb	27 @ 38	27 @ 38
" " 1878, ℔ lb	7 @ 20	7 @ 20
" olds, ℔ lb	4 @ 12	4 @ 12
FEATHERS—Live Geese, ℔ lb	40 @ 55	40 @ 55
SEED—Clover, West. & St.℔ lb	7½@ 10¾	7½@ 10⅛
" Timothy, ℔ bushel	2 75 @ 8 00	2 90 @ 3 05
" Flax, ℔ bushel	1 65 @ 1 90	1 75 @ 1 80
TOBACCO, Kentucky, &c., ℔ lb.	3½@ 14½	3½@ 14½
" Seed Leaf, ℔ lb	6½@ 40	— @ —
WOOL—Domestic Fleece, ℔ lb	80 @ 56	32 @ 58
" Domestic, pulled, ℔ lb	17½@ 55	19 @ 56
" California	15 @ 42	17 @ 44
TALLOW, ℔ lb	6½@ 6⅞	6⅜@ 6½
OIL-CAKE—℔ ton	32 50 @33 50	31 50 @32 25
PORK—Mess, ℔ barrel	12 00 @12 35	11 75 @12 50
" Extra Prime, ℔ barrel	10 25 @10 50	10 00 @10 50
BEEF—Extra mess	10 75 @11 25	11 00 @12 00
LARD, in trcs. & bbls, ℔ 100 lb	7 50 @ 8 00	7 65 @ 8 05
BUTTER—State, ℔ lb	17 @ 36	18 @ 37
" Western, poor to f'cy. lb.	12½@ 36	14 @ 37
CHEESE	11 @ 15	11 @ 14½
EGGS—Fresh, ℔ dozen	13 @ 20	11 @ 14½
POULTRY—Fowls, ℔ lb	7 @ 11	6 @ 13
" Chickens, ℔ lb	10 @ 13	6 @ 20
" Roosters, ℔ lb	5 @ 6	5 @ 6
Capons, ℔ lb	16 @ 20	15 @ 21
Turkeys—℔ lb	7 @ 14	8 @ 14
Geese, ℔ pair	1 00 @ 1 75	1 00 @ 1 75
Geese, ℔ lb	8 @ 12	8 @ 12
Ducks, ℔ pair	50 @ 65	50 @ 80
" ℔ lb	10 @ 14	10 @ 15
DUCKS, Wild, ℔ pair	30 @ 3 00	20 @ 2 00
PIGEONS, ℔ dozen	— @ —	40 @ 3 25
ENGLISH SNIPE, ℔ dozen	— @ —	4 00 @ 4 50
APPLES, ℔ barrel	1 75 @ 3 00	2 25 @ 3 25
STRAWBERRIES, new So., ℔ qt.	— @ —	20 @ 50
POTATOES, new Bermuda, bbl	6 00 @ 7 00	5 50 @ 6 00
" ℔ bbl	75 @ 2 00	1 00 @ 2 00
" Sweet, ℔ bbl	— @ —	2 75 @ 3 00
TOMATOES, new, W. I., pr bx	1 00 @ 1 25	50 @ 1 00
TURNIPS ℔ bbl	50 @ 75	75 @ 1 00
BEANS—℔ bushel	1 35 @ 1 80	1 35 @ 1 80
PEAS—Canada, in bond, ℔ bu	Nominal.	— @ 85
" new, green, ℔ bag	1 75 @ 1 80	1 75 @ 1 80
" new, South'n, per crate	1 50 @ 2 50	1 00 @ 3 00
STRING BEANS, nw, Flor., p.c	3 00 @ 4 00	— @ —
CARROTS, ℔ bbl	62½@ 87½	75 @ 1 25
BEETS, ℔ 100 bunches	1 00 @ 1 25	1 00 @ 1 25
" new Bermuda, per crate	2 00 @ 2 25	— @ 1 50
CABBAGES—℔ 100	4 00 @ 7 00	4 00 @ 9 00
ONIONS—℔ bbl	2 25 @ 4 75	2 75 @ 4 50
CRANBERRIES, per bbl	6 50 @ 8 75	7 00 @10 00
SQUASH, ℔ bbl	1 00 @ 2 50	1 75 @ 2 75
CELERY, per dozen bunches.	1 25 @ 2 25	2 00 @ 8 00
SPINACH, ℔ bbl	— @ —	1 25 @ 2 50

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	Beeves.	Cows.	Calves.	Sheep.	Swine.
Feb. 17	11,193	201	1,026	25,794	36,627
Feb. 24	9,585	185	758	22,807	25,626
Mar. 2	9,977	219	939	21 965	29,522
Mar 9	11,015	226	1,102	22,911	32,973
Total for 4 *Weeks.*	41,770	381	3,825	93,477	124,748
do. *for prev.* 5 *Weeks*	59,566	986	5,295	161,502	171,109

	Beeves.	Cows.	Calves.	Sheep.	Swine.
Average per Week	10,442	208	956	23,369	31.187
do. do. *last Month*	11,913	197	1,059	32,300	34,222
do. do. *prev's Month*	10,877	263	1,282	25,180	29,569

Prices for beeves the past four weeks were as follows:

WEEK ENDING	Range.	Larger Sales.	Aver.
Feb. 17	7½@11c¼.	8¾@10 c.	9⅞c.
Feb. 24	7 @11 c.	8¾@ 9¾c.	9⅜c.
Mar. 2	7¾@11¼c.	8¾@10 c.	9½c.
Mar. 9	7½@11 c.	9 @10 c.	9⅝c.

Beeves.—The second and third weeks were dull, the receipts being much below the average for the last four months. The improvement in market for the last week is very gratifying to all interested in the live stock trade. The foreign shipments have been larger, and the demands

for home consumption have somewhat advanced the prices .....**Cows.**—The supply has been liberal; the demand only fair, and the market dull throughout the month. Ohio cows sold at an average of $40....**Calves.**—There was a fair demand for good calves, the market not being overstocked. Prime Veals were advanced ¼c. per pound.....**Sheep and Lambs.**—The average receipts have been much below those of last month. Exporters have been liberal purchasers of heavy sheep, which therefore found ready sale. Prime Sheep brought 6c. Yearling Lambs, the best, sold for 8¼c....**Swine.**—The market has been quiet and steady, at $4.50 to $4.85 per 100 lbs. The receipts large early in the month, followed by a rapid decline.

The Horse Market.—The prices are low and the market dull, there being very little outside demand. A number of valuable stallions shipped for this country have either been killed or injured on the passage during heavy storms. Ordinary driving teams are selling at $200@$400; stylish coach horses with good speed even reaching $1,000@$1,500 per team.

Prices of Feed.

Cotton-seed meal,	per ton.	$30.00
Linseed-cake meal	"	37.50
Middlings	"	24.00
Bran	"	23.00
Corn-meal	"	23.00

Prices of Fertilizers.

Nitrate of Potash (95 per cent.), per lb.	9 @9½c.
Sulphate of Potash (potash 44 per cent) per lb....	3½@4 c.
do. do. (potash 27½ per cent) per lb..	1½@1¾c.
German Potash Salts (potash 12 to 15 p.c.) p. ton.	$15.00@18.00
Muriate of Potash (potash 50 per cent), per lb....	2 @2¼c.
Nitrate of Soda, per lb.	5@5¼c.
Sulphate of Ammonia (25 per cent.), per lb.....	4¼c.@4½c.
Dried Blood (ammonia 13 per cent) per ton......	$40.00@45.00
No. 1. Peruv. Guano 10 p. ct. ammonia, standard, ℔ ton..	$55.00
do. do. Lobos, do. do. do.....	46.00
do. do. guaranteed, ℔ ton, cargo K	56.00
do do. rectified, per ton, 9.00 p. c..	65.00
Soluble Pacific Guano, ℔ ton	45.00
Excelsior Fertilizer Works, Fine Ground Raw Bone,..	55.00
Mapes' Complete Manure (clay soils) per 1,000 lbs.......	25.50
do. do. do. (light soils) per 1,000 lbs.... ..	25.50
do. do. do. "A" Brand, (wheat) ℔ 1,000 lbs.	20.00
do. Bone, strictly pure, meal .....per ton.......	42.00
do. do. do. medium...... do.	36.00
do. do. do. dissolved..... do.	42.00
do. Fruit and Vine Manure........... do.	37.00
Stockbridge Rye Manure, per ton	45.00
" Wheat do do	45.00
" Seeding Down Manure, per ton......	40.00
Bowker's Wheat Phosphate, per ton.	40.00
Baugh's Raw Bone Phosphate, per ton	33.00
Baugh's Manure for Tobacco and Grain, per ton..	45.00
Walton, Whann & Co.'s Raw Bone Phosphate....	40.00
Gypsum, Nova Scotia, ground, per ton..........	7.50

REMEMBER THAT Three Months REMAIN For Premiums.

April, May, and June are the three months remaining, during which *any* person who wishes to obtain one or more of the useful and valuable articles offered in our Premium List (of which a copy will be sent free to any applicant not having one). They are easily secured. This has already been done by more than **25,000** persons, who during years past have tried with success the raising of Clubs of Subscribers for our paper, and availed themselves of the liberal offers of Premiums made by the Publishers.

We invite **all** our Subscribers to take hold of this work and secure a Premium while the offer is open. Specimen copies of English or German editions will be sent to any wishing to show them for this purpose.

Premium Clubs already started can be filled up. And there is plenty of time to start **new Clubs** and complete them.

Spring Work is opening, and multitudes will now feel the need of the help, the hints and suggestions given by practical men in the pages of the *American Agriculturist.* They only need some one to present the paper to them and take their Subscriptions. The Premiums will well *pay* those who do this for their trouble.

Distribution of the Carp.—Many of our readers write to enquire how they can obtain some of the valuable newly introduced Carp, the fish which was described in our January number. The Carp is being rapidly propagated in the Government ponds at Washington, and they will be distributed as fast as they are ready. The only way to obtain them, is to make application to the U. S. Fish Commissioner, through the member of Congress from the district in which the person desiring them resides, stating full particulars

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

More Extra Pages are again added, to meet the demands of business men who feel the influence of the renewed activity everywhere produced by the great crops of 1879, and the return to specie payments. Though with the advance in prices, the extra cost of added pages consumes much of the income from them, we prefer this to trenching upon the reading columns which are crowded with valuable information. And further, these added pages are useful to our readers, who will find many items of needed or useful information all through the advertising pages—telling what is offered, by whom, and where, and how. As often stated, one usually gets some new idea by reading what others say and *how* they say it.

Only *Reliable business* men, those having both the *ability* and *intention* to do what they promise, are knowingly admitted to these pages, and we are happy to bring such men to the acquaintance of our wide circle of active, enterprising readers. ☞ *When corresponding with our advertisers please always inform them that you are readers of this Journal. They will thus know what you expect and what we expect of them as to prompt and liberal treatment.*

Special Features of this Number:

The usual large variety of original articles and items on many topics is given, all of which most readers will peruse. Those too busy for this, should not omit:

The articles on **Fertilizers.** The large tables, pages 136, 137, give in very condensed form, the results of a few only of the many extensive and important experiments with fertilizers during two years past, which are to be continued this year, as noted. These experiments are, perhaps, the most valuable new contribution in our country to successful soil culture. A careful study and comparison of the figures in every line of the tables will furnish useful information. It will be well for themselves and for the country, if ten thousand of our readers embrace the opportunity offered to make such experiments the coming season. The method of procuring the fertilizers is plainly stated on page 135.

The plans and hints for the Work of the Month, pages 128, 129, 130, prepared by several practical men in the different departments, including one valuable new helper, will aid the experienced as well as the novice, jog the memory, supply sundry suggestions, and answer many questions in letters from correspondents.

Swindlers are on the "boom," and have a "benefit" on pages 132–3. Some Western Towns may "see themselves as others see (them)." Subscription thieves, Census cheats, etc., are noticed.

Fences and Fencing, though partly crowded this month by the Fertilizers, will afford some suggestions.

The House Plan with full specifications, on page 138, if it does not give just the plan wanted by many, will help in providing the house that is wanted.

Sheep Growers will enjoy the illustration and descriptions of the American Merino, with the important figures from Mr. Geddes, on pages 139–40.

Dairy Matters, "Gilt-Edged Butter," "Granular Butter," etc., pages 140–1, will interest every owner of a cow.

Hints and Helps to Farmers, although not all under that title, on pages 142–3–4–5, contain many items useful to one or another.

Poultry Farming, page 145, will answer many queries from correspondents and afford suggestions to others.

The new Coleuses and Flowers, page 147, will interest all who grow flowers.

Everybody should have at least one Grape-Vine. How it can be grown and trained anywhere, etc., is set forth on page 149.

Market Gardeners and others will find new information on Lettuce Mildew, page 148.

Housekeepers will of course read what a "Delaware Housekeeper" offers; the article on Cloth Mildew, etc.

The Boys and Girls are not forgotten, as they will see for themselves.

The "Basket," on pages 131–2–3–4, and 159–60, etc., with items on a great variety of subjects will be worth delving into, and supply some bits of useful information to almost to every one.

DID IT PAY?—A True Story.—Thirty-eight years ago, two brothers settled on adjoining farms with equal advantage as to soil, markets, capital, etc., One of them subscribed for the AMERICAN AGRICULTURIST, and now and then bought a Book or two about his own business—the whole costing an average of $6 a year. His boys read and *thought* about their work, became interested in and *respected* it, and were happy in their toil, because they *had something to think about.* They grew up intelligent, and settled as good, prosperous farmers, respected and influential....The other brother (partly influenced by an economical wife) "couldn't afford papers and books" (he could afford 6 cents a day, or $20 a year, for tobacco, beer, etc.) *His* boys worked sullenly by day, and "skylarked" at night; they despised and hated their work, which for them was only exercising brute force, with little mind applied. When old enough to escape parental restraint, they quit the farm, one for this, and another for that, and *none* of them have ever amounted to any thing. He is himself a sullen, dispirited man. Six dollars a year, or even $2 a year, would have made a wonderful difference—would have changed their whole course of life. Would it have *paid?*—Reader, choose the better way. Get your neighbors to join you, and secure some books for the use of all, through the opportunity still offered in our general premium list: or in *some* way put one or more books about their business, into the hands of your sons, from time to time, and read and talk with them about your business. It will be the best investment you can make for them.

Prizes at Fairs.—The custom of offering a year's subscription to the *American Agriculturist* as an award at fairs, is increasing. Some Societies have done this for several years, and we would call the attention of those who make up the schedules to the great value of such prizes. One who is awarded a dollar or two in money, soon spends the sum and forgets all about it. If instead, he has a subscription to the *American Agriculturist*, he is reminded each month of the Fair and of his success, and each time that the paper comes it gives him a hint to prepare for the next fair, and helps to sustain his interest in the local society by reminding him of its existence. Besides this, instead of small cash prizes for articles exhibited, it would be vastly better to offer in each class books upon the subject to which the department is devoted. Poultry books for fowls, Cattle books for cattle, a Fruit book for apples, a Cook book for jellies, etc.

Manure for the Garden.—It is too often the case that the corn field gets the best manure, and the vegetable garden must put up with that which is second class. By all means give the garden the best of the heap; that which is well rotted, and that in abundance.

Plans of Dividing Farms by Fences.—Any subscriber having a 200-acre farm, or one near that size, will do us a favor by sending a rough outline sketch of his arrangement of fences, showing the size, number, and shape of the lots, position of barns, lane, etc. A farm for mixed husbandry is understood, not a one-crop one.

The Next World's Fair.—It now looks as if there would be a World's Fair held at New York in 1883. For a while there were two, if not more, committees discussing the matter of location, concerning which there was great difference of opinion, if not of interest. As it stands now, a bill has been prepared asking Congress to incorporate a Commission for the purpose of holding the Fair, thus giving it a national character, which is to be further impressed upon it by requesting the President of the United States to notify other Governments of the Exhibition. No appropriation is asked of Congress. As the Centennial Exhibition was to commemorate the Declaration of Independence, the Fair of 1883 will celebrate the 100th Anniversary of the Treaty of Peace, and of the recognition of American Independence. The capital stock will be $12,000,000, in shares of $10 each.

Worms in Peach Trees.—"L.," Waynesburgh, Pa. If your worms are those of the Peach Borer, they are not in the roots proper so much as in the trunk just at or below the surface. The borers already in the tree will come out the coming June and lay eggs for a new crop unless you dig them out, or kill them by the use of a wire. To prevent their attacks another year, bind the lower part of the trunk with stiff paper, the lower edge of which should be below the surface, and the upper edge a foot above; or make a mound of earth a foot high around the base. A few may possibly find an entrance under the paper, but they are easily discovered and killed. In the peach orchards they make a business of "worming" in spring and fall, and as they look after them regularly they do not regard the borer as a serious evil.

The Resignation of Prof. Le Doux.—The North Carolina papers inform us that Prof. A. R. Le Doux has resigned his position as chemist to the Department of Agriculture of that State, a loss which the resolutions passed by the Board show is greatly regretted by those best able to judge of the value of his labors.

American Grape Growing and Wine Making.

Is the title of a new work by Prof. George Husmann, of the Missouri State University. Some 15 years ago the grape "craze" was general, books were written, nurseries could not supply plants fast enough, new varieties were offered, vineyards planted, and fortunes were made—on paper. Suddenly, in one of those peculiar reverses that no one can explain, all came to a sudden stand-still; grape-vines could not be given away, and were one to offer a new variety he would be laughed at. But amid all this general wreck, there were a few who had faith in American grapes and American grape culture; these men by no means gave them up; they have been quietly investigating the causes of failure, devising better methods of culture, seeking out better varieties both for the table and for wine, than we have ever had before, until now grape growing is in a healthier condition, on a surer basis, and promises far better results than it has ever done. Prominent among the few who have been faithful through every adversity, and whose industry has not abated, is George Husmann, who has so long been identified with grape culture in this country, and especially with that of Missouri. So great have been the changes since the flush time referred to, especially in the way of varieties, and our knowledge of them, that much in the old literature is out of date, and so much new material has accumulated that one of the demands of returning prosperity is a new work. This Mr. Husmann has given us, and all who know anything of him or of grape culture, are aware that none is more competent. This work will be ready for distribution in a short time. The work is in three Divisions, or Parts. The First Part is devoted to a description of varieties, and includes all the valuable recent additions to the list, and describes the methods of culture that he has found most successful, as well as treating upon the insect and other enemies, and showing how to combat or avoid them. Part Second gives the experience of others in the grape-growing localities in the different sections of the country, including Texas and California, with other matters of interest. Part Third is devoted to wine-making; not an elaborate treatise, but gives such practical directions as will allow any intelligent grape grower to convert his fruit into wine. The work is illustrated with explanatory engravings, and comes as a most timely and acceptable aid to the growers of native grapes. Sent from this office on the receipt of price, $1.50.

Value of Swamp Muck.—Some time ago, we remarked that an acre of swamp muck of good quality, 3 feet deep, was actually worth $25,000. No doubt such a statement is surprising. So was the statement of Dr. Lawes of England, that a ton of bran fed to cows, returned more than its cost in manure. Swamp muck, free from sand, contains 2 per cent, or 40 lbs. of nitrogen in a ton. Nitrogen is worth in the market, 25 cents a pound. So that a ton of swamp muck is actually worth $10 for the nitrogen in it. All that is needed is to work up the muck, so as to make the nitrogen available. An acre of swamp muck 3 feet deep, contains 2,500 tons, and would require 8 months to draw out, at 10 loads a day. Few persons realize the value of the fertilizing elements of common waste matters which lie under their feet, and the innumerable tons of matter, that may be available for fertilizing purposes, and that much of the idle and neglected materials represent a vast amount of wealth.

Cocoanuts for Hanging Baskets.—The shell of the cocoanut is so hard and durable that it can serve an excellent purpose as a hanging basket for small plants. If cut across in the middle, a single shell will make two baskets; it is perhaps more artistic to remove one-third of the space of the shell and use the rest. The shell of itself is "rustic" and harmonizes with plants.

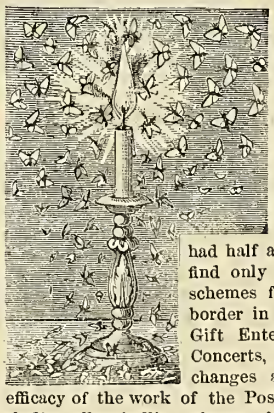
Preserving Timber.—There are several compounds used for preserving timber. The process called Kyanizing, invented by a person named Kyan, consists in saturating the timber with Bichloride of Mercury (Corrosive Sublimate). Salts of Copper have been largely employed. Creosote is now perhaps the most generally used preservative. The principle is the same in all cases: to change the albuminous matter in the wood—that part which is the most susceptible to decomposition.

Kerosene Stains upon a Floor.—A correspondent writes from Pilot Mound, Minn., that the breaking of a kerosene lamp has caused a "frightful spot" upon the floor, and wishes to know how it can be removed. Good kerosene has a boiling point at 380°, considerably above the melting point of lard—hence in order to drive it completely from any fabric, from paper, or from wood, it must be heated high enough to form a vapor, when, if pure, it may be completely removed. Heat may be applied to the floor by using flat-irons sufficiently hot, first placing a piece of paper over the spot. It may be that after the oil is driven from the surface by heat, the stain will reappear; some of the oil remaining in the wood will be brought to the surface by capillary attraction. In such a case it will be necessary to repeat the operation as often as the stain appears.

Muck Land.—"W. A. C.," Ohio, has some 20 acres of land which seems to be entirely deeayed vegetable matter, and he would convert it into grass land. Though it gets very dry in summer it is probable that it is very wet in spring, and that its present condition is due to an excess of moisture. Drainage is one of the first steps in reclaiming such land. If there are large tussocks of sedge, these should be cut off, dried, and burned. After a heavy dressing of lime, at least 50 bushels grass seed may be sown with a fair prospect of success, but without drainage and lime it will do little good to sow grass upon it.

Oleo-Margarine in Iowa.—The legislature of Iowa has passed a law, that every package of bogus butter shall be stamped "Oleomargarine" in letters not less than ¼ of an inch in length. Whoever violates the law must pay not less than $20 or more than $100, or go to jail for not less than ten days or both.

Sundry Humbugs.



As we look over our large monthly budget, we find two classes of documents "conspicuous by their absence." Not a single letter or circular showing how easy it is to make a fortune by stock speculation in Wall Street is here; formerly we had half a dozen daily. Then we find only two poor little lottery schemes from over the Canada border in place of the scores of Gift Enterprizes, Distributions, Concerts, and the like. These changes are indications of the efficacy of the work of the Postmaster General in excluding all swindling schemes from the mails and the great utility of the law which gives him power to do this. But though these gigantic schemes are broken up, the minor swindles and frauds seem to be present in as great variety as ever, and show that with the return of business prosperity comes a revival of those arts which have for their object "living by one's wits," or getting money without work. The scheme which appeals most directly to us is that in which some chap uses the

AMERICAN AGRICULTURIST AS A SWINDLING MEDIUM.

Complaints came from persons in Nebraska that they had not received the paper, and upon looking at our books no such names were found there. This occurring so many times, and the complaints all coming from the same part of the State, it was evident that there was something wrong. Upon inquiry it was ascertained that a person calling himself sometimes Jennings, and at others Stevens, had been about representing himself as our agent and obtaining money for subscriptions. He had a printed form for receipts, and the manner in which he signed these ought to have aroused suspicion, as they were sometimes signed "Orange & Judd" and again "Orange & Judd & Co." It should be known that

WE SEND OUT NO AGENTS

to solicit subscriptions, and that any one claiming to be such is an impostor. By our system of clubs, each one who solicits subscriptions for a club does so where he is known, and subscribers know to whom they pay their money, or can readily find out his responsibility. This chap is described as a "red-headed man" who claims to have been a Quartermaster in the army. Later a letter from the publishers of the "Nebraska Farmer," at Lincoln, informed us that apparently the same scamp had been taking subscriptions to their paper, and that they had offered a reward of $50 for his arrest. This is a form of swindling that is practised with almost every popular paper, and is one which it is beyond the power of publishers to prevent....The well known Madame Demorest, who publishes a Magazine devoted to fashions and sends out the widely celebrated

DEMOREST PATTERNS FOR DRESSES, ETC.,

is having trouble with a woman who goes about the country claiming to act as her agent and collecting money wherever she can. Madame will give $50 for the pleasure of sending her where the fashions do not change .....

A TOWN CHEATS A WIDOW.

The following is a fair sample of many like cases reported to us. We leave the names blank for those who feel guilty to fill and see how it would look with their own township standing out in capital letters in the blank:

"*To the Editor of the American Agriculturist.*

The town of ——— State of ——— wished to have a railway constructed to bring them near market, and which would (and did) largely increase the value of the farm products. To secure the building of the railroad the town promised aid to the amount of $50,000, or about $2 per acre. (The land afterwards increased at least $25 an acre all round.) Not wishing to pay the cash down, the town gave its Notes (Bonds) on 10 per cent interest. These were sent East, and on the plausible statement of agents, and having confidence in the character and good faith of the people of the town, the cash was paid for them, generally by widows and other poorer people, who having but little, wished to make it go as as far as they could in the returned interest. A neighbor of mine being in poor health, sold his farm, the savings of a life of hard work, and put $2,500 in these Bonds. He died soon after. His aged widow had those $2,500, in this Western Town's Bonds

AS HER WHOLE DEPENDENCE

for the rest of her days. The town, finding it not quite agreeable to pay the interest, to say nothing of the principal, got a lawyer to contest the validity of the bonds, partly on the ground that the Railroad did not quite keep up its agreement, and partly on the ground that it was "unconstitutional" for the town to issue the bonds. To carry favor with the people (voters) a Politician Judge decided against the bonds. The widow is unable to carry the case up to a higher or to a juster court. The other holders of the $50,000 Bonds are doubtless like situated, and being widely scattered and unknown to each other, they can not combine their efforts. And so the town of ———has cooly pocketed the $50,000 savings, needed by widows and orphans, and while they are sitting enjoying their comforts and luxuries, these innocent contributors of hard-earned cash are thrown into penury and want. They trusted in the good faith of the people who issued those bonds and loaned money on its credit." Comment is unnecessary....Postal Cards are a great convenience, but they are largely made use of to promote various doubtful and swindling schemes. Here we have the country flooded with postal cards advertising

THE "UNITED STATES WASHING MACHINE."

Sometimes it is "Lynn & Company," or it is "Sisson & Company," and they are "Importers and Exporters of Machinery." The parties named make a "Very special offer" to the one who receives the card, which it is. "If you will promise to show the U. S. Washing Machine, to any ten of your lady friends," they will send the machine packed and prepaid, to the person addressed, and also make terms for the sale of machines, etc. The "party of the other part," is asked to send only 75 cents, "which we have estimated will just cover the cost of packing, and the various charges to your point" This machine—so says the card, "is indeed a very remarkable labor-saving invention, doing entirely away with all the miseries of wash day"—and for 75 cents.—"It will," says the card, "do the work of several women," and much more to the same effect, and all for 75 cents and a promise to show it "to any ten of your lady friends." Having great curiosity to see what kind of a washing machine could be sent to Indiana and Kansas, for 75 cents, and feeling it to be something that our readers should know about, we

STARTED ON A VOYAGE OF DISCOVERY.

No. 36 Beekman Street was easily found, but not so easily the office of Sisson & Co. They occupy the *first floor*, if one begins his count from the sky downwards. The door stood open, and a man stood in the doorway. He didn't say, "Walk in," but his manner said as plainly as could be, "Keep out." The glimpse obtained of the interior was not tempting, evidently that room was as innocent of "washing," as we believe it to be of "machines." We would see Mr. Sisson. He of the door had a different view of the matter. We couldn't, as "it was after office hours."—A look at the time-piece gave 12.15 P. M. as the hour.—We would see the "United States Washing Machines,"—not much. He of the door informed us that they "did business according to a system"—one part of the "system" evidently being to keep people out of that room. Mr. S. would be back at 3.30, but it would be of no use for us to call then, as it would be "after office hours." We learned that the machines were all packed and ready for shipment, and also learned that Mr. Sisson did not care to be seen—unless indeed he of the door were Sisson himself. Our next departure was for

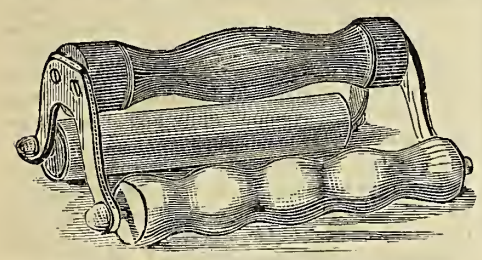
"THE IMPORTERS AND EXPORTERS OF MACHINERY,"

Lynn & Co., Nos. 104-106 John Street, which, in due time, was found. No man in the door here, but within the portal was a woman, and as communicative and affable as Sisson was short and surly. Here were machines too, real washing machines. We inspected—and as we inspected we learned: that the machine was a new one; was not advertised in the ordinary way, the object being to sell through agents—some agents sell a good many,

others failed.—The machines were made in New Jersey. Stacks of letters upon a table indicated a large correspondence; there were many machines packed and ready to be sent off. We could not resist the temptation, and bought a machine—

HERE IS A PORTRAIT OF THE U. S. WASHING MACHINE!

The card says: "The machine is simplicity itself." An inspection allows us to confirm this statement. This Washing Machine is 5½ inches long, 4¼ inches wide, and 2¼ inches in altitude. There are two rollers, one handle, and two castings (one at each end), and 4 screws—"simplicity itself." The card states that the "iron parts are covered with zinc to prevent rusting"—true again, and moreover "the wood-work is made from the hardest and best seasoned timber." The handle is black walnut, one roller with an irregular surface is of ash, and the other roller is covered with



THE "UNITED STATES WASHING MACHINE."

rubber—stuck into a piece of rubber tube—does not show. The U. S. Washing Machine weighs 8 ounces, and goes by mail for 10 cents. The machine must have cost nearly 10 cents to make it, and the profit of at least 50 cents on each 75 cent trade, is very fair considering the capital invested. Their "confidential wholesale rates are $36 per gross, which is 25 cents each." A washing machine for 25 cents! But we have omitted the

"DIRECTIONS,"—HERE THEY ARE.

"Use with any wash tub and board. Grasp the handle or rest the fingers on the cross piece, and rub the clothes backwards and forwards, pressing lightly. The friction of the corrugated rollers cleanses thoroughly. Dip the clothes or machine into the water as often as it is pressed out. When ready to rinse, roll the machine over the clothes as they are drawn out of the water."—We altogether object to that last sentence. This is a "*washing* machine," and you have no right to use it as a wringer, especially as a chap in Chicago makes a wringer which is much such a wringer as this is a washer. Parties calling themselves James W. Winslow & Co., and other aliases, advertise wringers at $1.50 and $2.50 each, which they modestly call "the best wringer in the world." Our friend Browning, President of the Metropolitan Washing Machine Co., thinking that he made a pretty fair sort of wringer in the old, well known "Universal," had a natural curiosity to see

"THE BEST WRINGER IN THE WORLD,"

and wrote to a Chicago Correspondent, to get him a sample. The Chicago man went to the advertised place, and found—a vacant lot, but after hunting with the aid of the Post Office folks, he at last found the wringers—and they are on exhibition at Mr. B's. New York office. Such a caricature upon a useful machine, we never before saw! It might help in washing, but not as a wringer, its place is under the boiler, to help boil the clothes. In the $1.50 wringer, the rollers are a couple of round sticks, but for $2.50 you get a thin piece of rubber over them. It is a good deal to have seen such a washer and such a wringer all in one day... It was suggested last month, that there would be various

SWINDLES PLAYED WITH THE CENSUS,

and gave a brief account of one of them.—Now comes another. Well dressed chaps visit the houses of well-to-farmers, and leave blank forms to be filled out showing the amount of certain crops raised on the farm. The unsuspecting farmer fills out the blanks and is requested to sign it. In a few weeks the farmer is notified that his note for $100–$200—as the case may be, is due at such a bank. The note turns out to be made over his signature to the census paper. The censns will not be taken until June, of which due notice will be given, and no doubt the officials will be able to show that they are the proper persons..... Here is more Postal Card work. This time it is an advertisement making a special

OFFER OF SILVER TEASPOONS,

by the "Tremont Spoon Company, of Boston." For 60 cents they send a set of six teaspoons. This is just 10 cents a spoon, which may be cheap or dear, according to the spoon. But it would look more business-like if the Tremont Spoon Co. of Boston, would give a street and number, and not have several of their cards, which are called "certificates" and to be returned with the order, all bearing the same number, 1723..... The most ridiculous "craze" just now is in reference to the so-called

ELECTRIC MEDICAL BATTERIES.

These are affairs about the size of a half dollar, made of two different metals, hung by a silk cord, and to be worn "as near the heart as possible." This thing is offered as "the most effectual and sure remedy for all diseases of the blood and nerves." What is the strangest thing about it all is, that people will believe that the wearing of the thing does them good. There is Boyd's Battery, with its "gimlet-pinted" electricity, and one apparently sincere man writes that it helped his wife when she did not know what the thing was. But then here comes one Elias, who says that "a wooden button worn upon the breast would be quite as effective as the so-called 'batteries' which have hitherto been sold as curative to an over credulous public."—That is one thing in Elias' circular that we can fully believe. But then Elias goes and makes an affidavit, and publishes it, and we will say that

IT IS A GOOD DEAL OF AN AFFIDAVIT.

It tells that there is no such chap as Prof. J. C. Boyd—that the battery of Boyd is not patented—and that his battery "was, and is, a contemptible fraud"—and ever so much more of the tallest kind of affidaviting—but alas! not one word about Boyd's "gimlet-pinted" electricity.

Elias has the thing brought to the finest point. He is logical. He tells us

"THE BLOOD IS THE LIFE,"

that is his starting point, which no one can deny. Then "Electricity is the Life of the Blood"—that's not quite so clear—but we are informed that his Medical Galvanic Medal generates electricity—and there you are, what more do you want? Our medal is the only one that turns out the real sort of Electricity.—"Electricity is the Life of the Blood.—"The Blood is the life"—would you live?—Then wear our medal. All else follows, from Rheumatism to Corns. The affidavit of Elias declares that Boyd's Battery is a "worthless fraud." Yet we know an intelligent young lady who can feel the electricity as soon as she takes it in her hand! One druggist in a small town sells several of these batteries every week, and the buyers are sure they are benefited. There is a pitiable popular ignorance about electricity, and an equally pitiable readiness to believe whatever is said about it. The idea that any combination of metals worked up into a medal and placed upon the skin, can have any effect upon the body in general, is simply absurd. Still it is asserted, and people like to believe it, just as some otherwise intelligent persons believe that carrying a Horse Chestnut in the pocket will keep off rheumatism....Last month we stated that a person was cutting a big swath in the doctoring field in Ohio, and claiming to be from

THE GREENLEAF MEDICAL INSTITUTE

of New York City. We hinted at the remarkable modesty that refrained from giving the street and number of a remarkable Institute, that could send out such a remarkable doctor as Dr. Greenleaf, the son of his father. Now we get the fellow's circulars from Davenport, Iowa, and these read: "Greenleaf Medical Institute, No. 648 Broadway." To be in New York City several hours daily, and not know about such an Institute, was a state of ignorance not to be endured, and so soon as we had the number we started from 245 for 648. So far from finding any sort of a Doctor's shop.

NO. 648 IS THE ST. CHARLES HOTEL!

The clerk of the hotel had never heard of Doct. Greenleaf or his Institute. As the most likely means of learning about such a chap we inquired of the policeman of that beat. He knew nothing of Doctor Greenleaf or his Institute.—Yet the honest people of Ohio are running after and paying money to this pretender—even the press helps him with favoring notices.—To judge from his circular, we do not think that the fellow is any more of a doctor than the St. Charles Hotel is an "Institute."

Early Strawberries.—The first arrival of strawberries from Florida, was about the first week in Jan., and since then the market has been well supplied. We have kept the run of the fruit that has been offered, and have been surprised to find that the variety reaching market in the best condition, is Charles Downing, a berry generally regarded as too soft for transportation to great distances.. The fruit from Florida makes the greater part of the journey by steamer in a refrigerator, and, as a general thing, arrives in excellent condition. While some varieties, like the Wilson, become dark colored and dull, after they have been picked for a day or two, the Charles Downing remains as bright and lively in color, as if just from the vines—a most valuable quality in a market fruit, and especially in one for shipping.

The Great Dog Show.—The exhibition of the Westminster Kennel Club, has become an established institution, and is looked for with the crocuses. This year the show will be held on the 27th, 28th, and 29th of the present month, the entries closing on the 12th. We recorded the great success of last spring's show, but the managers think the coming one will excel all former exhibitions in attractiveness. As in former years, Madison Square (formerly Gilmore's) Garden, will be the place.

(*Basket Items continued on page* 159.)

Bee Notes for April.

BY L. C. ROOT.

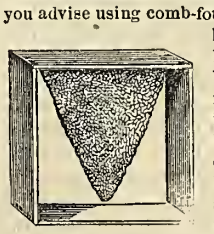
In most locations bees will be placed upon their summer stands during the present month. At this season of the year great care should be taken to give the bees every advantage and encouragement to increase in numbers. After they have had an opportunity to fly freely, the hives should be examined and thoroughly cleaned. A good way to do this is to start with a clean, empty hive, and place it upon the stand of the first hive to be examined, having the one containing the bees directly in the rear; lift the combs from the old hive and place them in the new one. After cleaning the hive from which the bees have been taken, pass to the next, and transfer from that into the first hive, and so through the yard. When handling the hives, be sure that each colony has a laying queen, and plenty of honey. Let there be only a sufficient number of combs for the bees to occupy. Carefully open the hives in the morning, when the bees are compactly clustered, and remove those combs not occupied by the bees. This will allow those inexperienced to decide the proper number of combs to leave. The combs that are thus removed from the hives should be cared for, and kept in a dry place where mice or rats will not have access to them. If any colonies should be found queenless, unite such with the lightest stocks that have good queens. After the bees have had an opportunity to fly for a day or two, the presence of a queen may usually be ascertained by the presence of eggs in the combs in the center of the cluster. When the number of frames is limited, have a good, close fitting division board at the side of the combs to diminish the space which the bees must keep warm. Contract the entrance to the hives, and be sure that all upward ventilation is prevented. All this should be done in the middle of the day when it is warm. Care must be taken not to expose combs, or in any other manner to induce robbing. After bees are put in proper shape do not make the mistake of opening the hive too often until the season is sufficiently advanced. Handling bees too early, to stimulate breeding, often results greatly to their injury. As the season grows warmer, and the bees increase in numbers, combs may be added.

ANSWERS TO CORRESPONDENTS.

SIZE OF BOXES.—"What is the most desirable size for section honey boxes?"....This subject is receiving much attention of late. It was discussed at the session of the North Eastern Bee-Keepers' Association, recently held at Utica. The sizes that are the most used at present are 4 by 4 inches, 5 by 5 inches, and 5 by 6 inches. The honey dealers of New York have decided in favor of the medium size, which takes 5 by 5-inch glass, and weighs about 1¾ lb. when filled with honey. Two inches is the proper width.

MRS. COTTON'S METHOD.—A correspondent writes: "I have received a circular from Mrs. Lizzie E. Cotton, in which she claims large yields of honey, if we will adopt her hive and system of management. Is it reliable?"....The numerous inquiries in reference to the above mentioned circular, make it necessary that we should give our views. One with but a slight knowledge of matters relating to bee-keeping should be able to see at once that the statements in this circular are not reliable. For the benefit of those who are uninformed, we would say that we have known of this Mr. Cotton (it is said that it is *he* who sends the circular) for many years, and regard his claims as to his hive and his statements as to the management of bees as thoroughly unreliable. Whoever is induced by the statements of this circular to commence bee-keeping, will be sure to meet with great disappointment.

COMB-FOUNDATION.—One correspondent asks: "Do you advise using comb-foundation in honey boxes. How large should the piece be, and how do you fasten it in the box?"....A Foundation is now made which is so very light that it is not objectionable in the boxes. Make the guide for each comb of the width of the box at the top, and let it come to a point at the bottom, as shown in the engraving. Some advise a piece of the full size of the box. Whatever the shape, it should reach to within about three-eighths of an inch of the bottom of the box, so that the bees can reach it. I use the best white glue to fasten the foundation in the boxes.



BROOD FRAMES.—"Do you advise filling brood frames with comb-foundation before hiving a swarm?"....If you use foundation in which wires are incorporated to prevent sagging, its advantages cannot be over estimated,

as you can thus secure straight worker combs throughout, and the hive will be filled sooner than without them.

Fences and Fencing.

Fencing Letters Unanswered.

It is simply impossible to reply individually to many hundreds of letters—at least a bushel of them—asking specifications as to cost of iron fence, lists of manufacturers, opinions of this and that particular variety, the value of this or that old or new form, whether this or that new form is patentable, what we think of it, etc., etc. The best we can do is to read over what is received and prepare for these columns such materials as seems to be most worthy of publication for general information.

But more Letters are Wanted.

We want many more letters from those who have *used* barbed wire fencing for a year or so, telling plainly the present opinion of the user, in regard to its value, its dangerous character or otherwise, whether the user will put up more and advise others to do so or not, what kind is used, and any other items in the same line; and we desire to know in each case whether the writer has any direct or indirect interest himself or through friends, in the sale or manufacture of any kind of fencing. Several letters have come strongly recommending one kind or another, which have upon investigation been found to have come from *interested* agents, whose opinions are necessarily colored by such interest.—We have not the slightest interest in any one kind over another, and neither sell nor supply *any* kind.—Our only business is to collect and supply information that may be most useful to all our readers, and to promote investigation and improvement. These last remarks are made necessary by the receipt of numerous letters saying: "Send me your circulars and the cost of (this or that amount) of fencing"—letters doubtless written by those who only learned through other journals that we are giving special attention to this subject.

NOTE.—In describing the iron post, fig. 27, on page 92 last month, it was credited in some of the first copies to Phillip S. Justice. It should have been Abram G. Powell & Co., Philadelphia, and was printed correctly in the later issues. The advertising pages gave the manufacturer's address.

Weight of Iron Posts by Measuring.

A solid or cubic foot of water at ordinary temperature (62° F.) weighs 62½ lbs. avoirdupois, and 27⅝ solid inches (27.648) weigh 1 lb. Wrought iron has a specific gravity of 7.645 to 7.817—average say 7.731, that is, it is about 7¾ times as heavy as water. Therefore a trifle over 3½ solid inches (or 3.575 solid inches) of wrought iron weigh one pound. Examples: A bar of iron 1 inch wide, one-half inch thick, and 6½ feet (78 inches) long, contains 78x1x½, or 39 solid inches. Adding 4 cyphers to the right and dividing by 3.575, gives the weight of such a bar in pounds and tenths, that is 10.9, or 10⁹/₁₀ lbs A wrought iron bar 6 feet long, 1½ inches wide, ¼ inch thick (72x1½x¼), equals 27 solid inch, and 27.000÷3575 equals a little over 7.5 or 7½ lbs. Cast iron is nearly one-eighth lighter than wrought iron, say 13 per cent less.

A Wisconsin Farmer's Talk About Fences.

To Editor of American Agriculturist:

I wish to say a few words with regard to the "*Barbed Wire* Fence" question. With all the figuring on this point, I find no showing describing how it is possible to build a *lawful* fence with wire. It would be a grand thing for the country if this could be done, *but it can not* unless 7 to 10 wires are used. Even then I doubt whether it would turn pigs, and any fence that won't do that, is not the thing for a majority of farmers to adopt.—I could give you facts and figures to substantiate what I say. but do not wish to be tedious. I own a snug little farm of 82 acres here, and I have at least ten different kinds of fencing on my place, "Barb Wire" included, so I know of what I speak. Whenever any man can show me how to build a wire fence that will be pig-proof, then I will adopt the plan, even if it cost one-half more to construct it, for in the long run it will be much cheaper than wood fences. Meantime, we must be content to get along the best way we can.

A GOOD FENCE

can he constructed in either of the following ways—fence-boards 16 feet long; posts 8 feet apart:

3 *boards and* 2 *wires.*	*or* 3 *boards and* 2 *wires.*
3½ inches to first board.	3 inches to first board.
6 inch fence-board.	6 inch fence-board.
3½ inches to second board.	3½ inches to second board.
6 inch fence board.	6 inch fence-board.
6 inches space.	5 inches to third board.
6 inch board.	6 inch board.
10 inches to first wire.	9½ inches to first wire.
13 inches to second wire.	13 inches to second wire.
54 inches total hight.	52 inches total hight.

The law in this State (Wis.) requires fences to be 4½ feet high, or 54 inches, but I would be willing to risk a wire fence 50 inches in hight, thus: 50 inches to top wire, 37 inches to next, 27 inches to next, 19 inches to next. The bottom space of 19 inches left can be managed this way: Make portable pieces of fencing by nailing two 4-inch wide fence-boards on to stakes, and driving them down at bottom; they can be taken up at pleasure. True, a fence of three or four wires will do for cattle and horses, and may be a good thing out in Texas or Colorado, and other Western States and Territories, but for general adoption it is not the thing, because you can not construct a perfect or lawful fence with it. As to the present forms of barb wire being dangerous to stock, I have only to state that whoever says so, does not know what he is talking about. I have two horses that stick their heads over and between the two top wires of my fence, only 11 inches apart, and crowd them down and reach at least a foot on the other side the fence, and eat the crop close to the ground, and I have seen cows do the same, and I use the Frentress Wire, which is, perhaps, the severest kind manufactured.

There is not a single form of Barb Wire at present in use that is half *barbarous* enough. My stock have never received the least damage from the wire, and I don't believe they ever would, were the barbs ten times as severe, in fact we need a more severe barb wire introduced, and then we may hope to make a pig-tight fence by putting 3 or 4 wires pretty close together at the bottom of the fence.

ROBERT WOOD.

GRANT COUNTY, WIS., *March* 1, 1880.

We give the above as a sample of several letters from intelligent men. Others express themselves equally strong against the use of barbed wire, as *barbarous*, as dangerous to horses, cattle, and sheep, as having "the barbs festooned with wool picked from sheep, etc." One of the most frequent objections we hear just now is, that in plowing up to barbed fences, either along side of them or at the head-lands, the team has to be kept at such a distance that there is almost as much waste land as in the use of the "Virginia" or "worm" rail fence.—Thus far, the opinions are so contrary and so nearly equally divided, that one is at a loss what to decide, and we urgently invite further correspondence as stated above. The fact that serious injuries have resulted from the use of long barbs is not set aside by the statements of others that they have experienced no trouble. The question to be decided is: Is the danger to animals, and are the objections on account of working up close to them, their tearing of garments, etc., sufficient to militate against their advantages? It is contended by their advocates that unless the points are both long and sharp, they will be little more feared and be but little more effective, if any, than the old plain wire; that animals eager to reach good feed will not be stopped by anything short of rows of sharp spears that will pierce to the quick. There is a good deal of force in this statement, more than we were ourselves at first disposed to concede. But our position has been, and is, that of an unprejudiced and, personally, uninterested collector of information, a *learner* in behalf of our readers and the public.

We have a farm needing new fencing, hut we are still patching up the old fence, partly because the collected experience is *not yet* sufficient to enable us to decide upon the best kind, and partly because new forms and new devices are being called out by the agitation of the subject, and we are hopiug to find something better than has yet been brought before the public, both for posts and for the running fence. We are convinced that a good fence, both posts and wire or straps. made of steel or iron, or both, is far superior to wood as respects durability and freedom from repairs; that a metal fence thoroughly protected against corrosion will be cheaper in the end, at double the cost of wood—except in the few localities where locust, red cedar, and chestnut timber are abundant and cheap.

As previously stated, the very recent "boom" in the prices of iron and steel, amounting to fully 100 per cent, has temporarily checked and delayed the general adoption of these materials for fencing and especially for posts. Still, the cost of the raw material being only a comparatively small part of the running fence, exclusive of posts, the advance in cost of wire has not been so great as to prevent its pretty general adoption. Indeed it is indispensable in many parts of the country, because of an absolute lack of wood on the spot, and the large cost of its transportation, while lumber itself has risen in value very materially. The supply of iron and of steel is unlimited—the earth's surface is full of it, so to speak, or at least the deposits of iron ores are inexhaustible, and the processes of reduction and manufacture are being constantly cheapened by new discoveries and inventions.

The present high prices are merely the result of a temporary sudden great demand. Iron and steel can be profitably produced far below the present selling rates, and the demand will be met by increased production, so that we shall in the near future be able to obtain them at perhaps as low rates as before the recent advance. In the meantime, while continuing to use metals for new fencing, the country will be ready with improved forms of posts, to use iron and steel as the chief fencing materials, as soon as prices become normal.

A Choice as to the Length of Barbs.

In corresponding with manufacturers, at least two leading establishments express to us a readiness to meet the wishes of purchasers, by providing barbs of any length or *shortness* and *bluntness* that may be desired, and we presume most others will do the same. They nearly all assert that the prevailing present demand is in favor of long and sharp barbs. As we have already stated, the use of long and sharp barbs will not be submitted to by the public if placed upon fences along traveled highways, and anything that can catch and tear garments, or scratch the human skin must be absolutely prohibited where, in village or country, the margins of the public streets are used as sidewalks. We doubt if legislative enactment will be or should be made to prevent any one from erecting his interior fences as *barb*arous as he may choose—except where Mr. Bergh and his humane co-workers may interfere in behalf of the dumb animals. Any barbs having a hooked form should be rejected.

Fig. **28** comes from "Citizen," Philadelphia, who has known this form used successfully for ten years past. The base piece is made of cement and gravel by the farmer himself, one barrel of Rosendale Cement, with fine gravel, sufficing for about 35 of the bases. Diameter of bottom, 14 inches; hight, 13 inches. (These dimensions can be larger or smaller, according to the looseness or firmness of the soil). An opening in the top 5 inches or so in depth admits an iron bar, say one inch wide, half-inch thick, and three feet, or more, high. The bar is fastened in by pouring around it melted sulphur. "Citizen" says it stands so firmly, that he has seen the bar bent nearly to the ground without disturbing its base fastening.

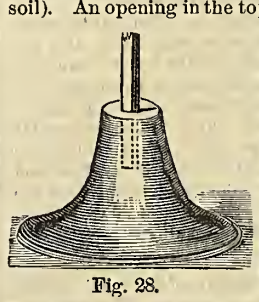


Fig. 28.

The bar can he notched or pierced for attaching the horizontal wires. If made of steel, it can be of smaller size. Such a post may be usefully employed in many locations, but digging the large holes required to receive the wide base would he objectionable for extensive field fencing. The depth re-

quired, however, is only half that needed for smaller bases, and there would be no lifting by frost At $1.75 per barrel for cement, and with gravel at hand, the outlay for 35 bases would be 5 cents each. A wrought iron bar 1 inch wide, half-inch thick, and four feet long, weighs about 6¾ lbs.

Important to Every Farmer.

The American Agriculturist Farm Experiments to be Continued.—A Key to Valuable Knowledge Placed Within Reach of All.

All the talk about "Progressive Farming," "Improved Agriculture," "Science Applied to Farming," has two objects; the increase of the farmer's knowledge and of his crops. If a farmer must invest $19 to get $20 of increase from a field, it is poor science, and poor farming; but if by investing $5 on a field the increased crop brings him $20, then "Science Applied to Farming" pays, and it pays him to know the reason why.

There are Some Settled Points in Agriculture.

Among these are: 1. All soils, excepting of course the virgin ones of the newer States, for profitable culture *must be* manured. 2. The larger the crop upon an acre, the cheaper per bushel, ton, etc., should that crop be raised. 3. In our ordinary farming no farmer makes all the manure that he could profitably use upon his farm. 4. The main value of manure (stable or bard-yard) depends upon certain constituents, and these may he had in other forms; in artificial or chemical fertilizers. 5. All soils do not alike need the *same* fertilizers. 6. It is a well established fact that while it will pay the farmer to buy the fertilizers his soil needs, it is a waste of money to buy and apply to his soil, constituents of which it already has enough. The question will naturally follow—

How Can We Find Out What the Soil Needs?

It is to help every farmer to answer these questions: "What does my soil need?" "What fertilizer can I buy that will pay a profit in crops?" that the *American Agriculturist* Experiments were instituted. These experiments were begun in 1878, and were continued last year. Several results were given last month, and this month we present on page 136, in a tabulated form, an array of facts that will convince the most sceptical that

The Right Fertilizer in the Right Place

will pay. And not only pay, but the profit on the investment is often such as to help answer the vexed question: "Will Farming Pay?" These results were obtained by just such men as *you*, "Farmer A," or you, "Farmer B," on just such farms as yours, and by just such means as are within your reach. These men are farmers, like yourselves.

Now there are thousands, yes, tens of thousands, of just such men as these all over the country; every township, every neighborhood, has one or more readers of the *American Agriculturist*, who would have the same knowledge of their own fields that these farmers have of their soils. If these farmers knew that it would *pay* to buy Potash, or Phosphoric Acid, or Nitrogen, they would buy it, but they can not afford to run many risks. It is evident that every one of these experimenting farmers now knows better, to a certain extent,

Just What He Wants and Does Not Want

to put upon *his* land this year. Not a farmer who reads this but would gladly give $5 or $10 to know as to his farm what these people know as to their's There is no way in which this information can he had so cheaply and so certainly as that by which these farmers acquired it. They asked the soil, and

The Soil Responded.

The questions were in the bags of the AMERICAN AGRICULTURIST FERTILIZER EXPERIMENTS. The results obtained last year are so valuable, not only to the experimenters themselves, but to agriculture generally, that we propose to

Continue the Experiments in 1880.

While changes, and it may be some improvements might be suggested, yet for the sake of uniformity and to prevent all mistakes, the methods and plans of last year will be unchanged for 1880. The same fertilizer in (with one exception) the same sized parcels, will be sent out with the same directions, at the same prices, and by the same dealers, though the prices of some materials have so advanced that it will be done at a loss.

The Manner of Conducting the Experiments

was given in full in the April No. of last year, and will be explained plainly and in detail in the directions that accompany the fertilizers. We need only here give a general idea of what is to be done. Those who consult the article given in April last will find that *three* sets were offered, for one fourth, one half, and one acre, respectively. The offer this year is the same in every particular, except in the omission of the first, or quarter acre set. Very few called for that, and the area of land being too small for satisfactory results we now offer but

Two Sets of Experimental Fertilizers.

Viz.: Set No. 2 for half an acre, cost $5, and Set No. 3, for one acre, cost $8.30. It is thought hetter to avoid all confusion to continue the *same numbers* (2 and 3) for these sets that they bore last year, omitting No. 1. In order to insure uniformity in the fertilizer furnished by the several parties who have agreed to supply them, the publishers have stipulated that samples shall he analyzed hy Prof. Atwater, and that they shall in every case be satisfactory to him as to quality. Full directions for making the experiments will be furnished with the fertilizers, and also blank forms for recording the results. The farmer who orders this half-acre set will find it labelled thus:

AMERICAN AGRICULTURIST FERTILIZER EXPERIMENTS } 1880.

No. 2—Half Acre Set.

Cost of Set of Fertilizers, in bags, shipped, $5.00.

This will consist of *eight* bags, *A*, *B*, *C*, *D*, *E*, *F*, *G*, *H*, which are to be used on eight plots, two being left unmanured for comparison. Bags *A*, *B*, *C*, contain *Nitrogen*, *Phosphoric Acid* and *Potash*, singly. Bags *D*, *E*, *F*, contain these constituents in twos. *G*, contains all three together, and *H*, contains *Plaster* only.

EIGHT RODS.

TEN RODS—each Plot one Rod wide and Eight Rods long.)

Plot 0....
No Fertilizer; for comparison.

Plot A....*Nitrogen.*
Bag **A,** containing 10 lbs. of Nitrate of Soda.

Plot B....*Phosphoric Acid.*
Bag **B,** containing 15 lbs. of Superphosphate.

Plot C....*Potash.*
Bag **C,** containing 10 lbs. of Muriate of Potash.

Plot D....*Nitrogen* and *Phosphoric Acid.*
Bag **D,** containing 7½ lbs. of Nitrate of Soda. mixture of 15 lbs. of Superphosphate.

Plot E....*Nitrogen* and *Potash.*
Bag **E,** containing 7½ lbs. of Nitrate of Soda. mixture of 10 lbs. of Muriate of Potash.

Plot F....*Phosphoric Acid* and *Potash,*
Bag **F,** containing 15 lbs. of Superphosphate. mixture of 10 lbs. of Muriate of Potash.

Plot G...*Nitrogen. Phosphoric Acid, Potash.*
Bag **G,** containing 7½ lbs. of Nitrate of Soda. mixture of 15 lbs. of Superphosphate. 10 lbs. of Muriate of Potash.

Plot H....*Plaster* (10 lbs.)
Bag **H,** to learn the effects of this fertilizer.

Plot 00....
No fertilizer; for comparison.

How to Use these Fertilizers.

Select a piece of uniform soil, as nearly like the rest of the field as may be. It can he marked out in any field prepared for a crop. It should be nearly level, so that one plot will not receive the washings from another. When plowed and harrowed well, mark off with stakes, in 10 plots, as shown in the above diagram; one plot for each bag, and calling them as here indicated.

Here you have the first and last plots marked 0 and 00, while the others are one for each of the eight bags, which are marked with the same letters. Sow each bag uniformly over its own plot; that is, bag *A*, on plot *A*, etc. (the fertilizers are all finely ground and dry).—Harrow the fertilizers well into the soil, running the harrow lengthwise of the plot, taking care to confine each fertilizer to its own plot. Then plant or sow corn, potatoes, or any other crop over the whole, the same amount on each plot, running rows lengthwise of the plots, and cultivate and treat the whole alike during the season. N. B.—Those who wish, can divide the whole plot across into halves, planting, say, corn on the left-hand half and potatoes or other crop on the right-hand half, so that each crop shall extend *across* the fertilized strips. It is important to select worn out soils for soil tests, that is, those having only their "natural strength," and little or no richness left from former manuring. The soil must be uniform, or the tests will mislead.

What the Experiment will Tell:—

FIRST: By watching the growth, and measuring the gathered crop, it will be easy to see how the crop on that soil is affected by Potash, or hy Nitrogen, or by Phosphoric Acid, or by combinations of them.

SECOND: By comparing each plot with the *no fertilizer* plots, 0, 00, it will be easy to see which fertilizer pays expenses, or the greatest profit.

THIRD: Such an experiment will he interesting, will stimulate thought, and prepare for more extended investigations. If there are boys on the farm, it will awaken interests in their minds, and be a good agricultural school, on a small scale, at home. The Pamphlet sent with each Set will greatly help in this.

FOURTH: It will be a good step towards helping each experimenter to decide for himself, and for his neighbors, *what* fertilizers, if any, they can go into more largely in the future.

Of course a single trial will not tell the whole story. The trials should he continued through subsequent seasons. This is not a royal road to knowledge, hut it is a start in the right direction.

NOTE.—It will be a good plan to add other similar Plots, and apply on them severally, stable manure, lime, and any other fertilizer at hand, for making a comparison.

☞ The above is very simple. The bags are all of accurate weight, with standard fertilizers of known quality and composition, and all the experimenter has to do is to mark out the plots, and use the bag marked for each plot. The result in the growth and in the yield will indicate what each fertilizer will do, on any soil for the crop or crops grown, also what any two of them will do if used together, and what all will do used together. The different materials in each hag are thoroughly mixed and prepared, so that they have only to be sown without further mixing or care.

The Second Set is for one acre, and is marked:

AMERICAN AGRICULTURIST FERTILIZER EXPERIMENTS, } 1880.

No. 3—One Acre Plot.

Cost of Set of Fertilizers, in bags, shipped, $8.30.

This is the same as *No.* 2, except that the quantity in each bag is *doubled*, for plots of double size (one-tenth acre each). As the expense for bags, putting up, shipping, etc., will he the same, for each set, the double amount of fertilizer put in will cost only $8.30, instead of $10. With the larger plots, more valuable results will be obtained, and more than one crop can be tried. The expense of the fertilizers, $8.30 per acre, will very likely be more than returned in the increased crop on a part of the plots. We strongly advise all to try Set

SAMPLES OF THE AMERICAN AGRICULTURIST FIELD EXPERIMENTS WITH FERTILIZERS.

Results with Corn, Potatoes, Turnips, and other Crops, with different Fertilizing Materials in 1878 and 1879.

PRODUCE, INCREASE, AND GAIN OR LOSS PER ACRE.

1 Acre=0.40 Hectare.
1 Bushel=0.36 Hectolitre.
1 Pound (avoirdupois)=0.45 Kilogramme.
1 Bushel per Acre=0.9 Hectolitre per Hectare.
1 Pound per Acre=1.12 Kilogramme do.
$1.00=about 5 Francs or 4 Mark.
1 Franc=19.3 Cents; 1 Mark=24.8 Cents.

ABBREVIATIONS USED.
Cl., Clay. Lsc., Loose.
Snd., Sand, Sandy. Lt., Light.
Grav. or Gr., Gravel. Yel., Yellow.
St., Stony. Hpn., Hardpan.
Calc, Calcareous. Rd., Red.
Var., Variable. Med., Medium.
Hvy., Heavy, Unf., Unfavorable.
Cpt., Compact. Fav., Favorable.

Number of Experiment.	Experimenter.	Year.	Surface Soil. Kind.	Texture.	Moist'e	Sub-soil.	Previous Cropping.	Weather. Temp'e.	Moist'e.	In Gen.		O No Manure.	A Nitrate of Soda, 200 lbs.*	B Dissolved Bone-Black, 300 lbs.	C Muriate of Potash, 200 lbs.*	D Nitrate of Soda, 150 lbs. Dissolved Bone-Black, 300 lbs.	E Nitrate of Soda, 150 lbs. Muriate of Potash, 200 lbs.*	F Diss'd Bone-Black, 300 lbs. Muriate of Potash, 200 lbs.*	G Nitrate of Soda, 150 lbs. Diss'd Bone-Blk. 300 lbs. Muriate of Potash, 200 lbs.*	H Plaster, 200 lbs.	Farm Manures.
												Cost†	$7.50	$5.25	$4.50	$10.88	$10.13	$9.75	$15.38	$0.80	Var'e
												Yield	bu.	bu.	bu.	bu.	bu.	bu.	bu.	bu.	bu.
	CORN.																				
1	E. K. Haight, Freehold, N. J.	'78	Clay loam.	Compact.	Wet.	Compact.	Meadow.		Wet.				6 9								
2	G. G. Childs, Swoopes Depot, Va.	'78	do.	do.	Dry.	Clay.	Pasture.		Wet.	Unf.		6 5	3.2	23.0	5 8	25 6		22.2	27 4	10.5	10.4
3	John W. Pierce, W. Millbury, Mass.	'79	do.	do.	do.	Gr. h'pan.	Meadow.	Cold.	do.	do.		3 3	2.7	12.0	6 7	12.0	5 5	16.7	13.7	3 6	39.7
4	John Flanagan, Paola, Kansas.	'79	Clay.		do.	Cl. h'pan.	Corn.	Warm.	Dry.	do.		18.5	20 3	20.3	17.3	19.2	12.9	17.6	20.1	13.0	
5	W. I. Bartholomew, Putnam, Conn.	'78	Clay loam.	Loose.		Compact.	Meadow.	Med.	Med.	Fav.		17.7	18 7	39.9	19 1	41.9	21.1	43.1	51.7		49.8
6	do. do. do.	'79	do.	do.		do.	do.	Cold.	Wet.	Unf.		8.1	7.4	36.5	7 7	41.4	7 1	42.0	45.7		36.0
7	Buel Landon, South Hero, Vt.	'78	do.	Light.	Med.	Gr. clay.	Oats.		Var.	do.		7.0	17.5	10.3	9.2	16.5	15 0	18.6	13.5	14.4	48.6
8	do. do. do.	'79	Clay calc.	Loose.	Dry.	C'pt clay.	Meadow.	C ld.	Dry.	do.		19.7	24.2	22.3	11 0	31.3	27.2	14.0	33.4	25.8	18.0
9	Chester Sage, Middletown, Conn.	'78	Clay loam.	do.		Stony.	do.	Med.	Med.	Fav.		9.1	21.5	16.5	62.3	11.2	68.9	70.3	84 0		48.3
10	D. B. Wertz, Johnstown, Pa.	'78	do.	do.	do.	Clay	Rye.	Cold.	Wet.			7.5	6.2	20.0	12.5	32.5		25.0	30 0	17.5	
11	J. H. Stiles, Morris Plains, N. J.	'78	Gr. Clay.	Light, l'se.	Med.	Cl. h'pan.	Corn.		Wet.	Unf.		9.5	18.0	11.0	42.0	16.0		48.0	56.0	9.0	50.0
12	J. J. Dearing, Covington, Ga. (1)	'78		do.	Dry.	Sandy.	Pasture.	Var.	Var.			5.5	7 5	10.7	7 8	18.4		14.5	18 5	9.4	
13	Geo. Spalding, Mason, N. H.	'79	Loam.	Loose.	Med.	Loam.	Grass.	Cool.		Unf.		8 7	6 8	16.6	10.4	17.7	10.5	21.7	26 6	19.2	32 5
14	W. C. Holmans, Graham, N. C.	'78	Snd. loam.	do.	Dry.	Clay.	Corn.	Cold.	Dry.	do.		8.8	9.0	17 5	7.5	22.5		16.3	20.0	7.0	20.0
15	A. P. Arnold, Vineland, N. J.	'79	do.	do.	do.	Gr. clay.	Vineyard.			Fav.		3 7	37 6	14.6	8.9	29.8	18.4	10.1	18.8	3.7	
16	W. C. Atwood, Watertown, Conn.	'79	do.	do.	Med.		Rye.			do.		8.0	14 7	23 3	29.7	38.7	38.2	46.2	80.2	10.6	90.5
17	J. M. Manning, Taunton, Mass.	'79	do.	do.	do.	Sand.	Meadow.	Var.	Var.	do,		11 3	11 2	16 6	11.0	18.9	10.0	18.3	15.9	4.5	28.9
18	Frank Bourne, Hanson, Mass.	'79	Gr. loam.	do.	Dry.	Gr. & St'y.	Pasture.			Unf!		12.5	37 5	41 2	25.0	22.5	38.0	45.0	45.0	37.4	
19	Z. E. Jameson, Irasburgh, Vt.	'79	Sandy.	Light.	do.	Porous.	Meadow.		Dry	Unf.		5.0	11 0	8 5	19.5	17.0	28.0	26.0	31 0	15 0	28.0
20	N. B. Lewis, Pine Hill, R. I.	'78	Gravelly.	do.	do.	Gravelly.	Pasture.		Var.			7.5	5 6	20.7	7.6	28.8		23.8	27 5	7.5	32.5
21	J. B. Mead, Randolph, Vt.	'79									Soils yield'g, no man'e, less than 30 bu.	7.7	6.8	7.0	41.3	20.5	39.3	50.3	43 1		46.5
22	Prof. J. R. Farrington, Orono, Me.	'78	Clay loam.	Compact.	Moist.	Clay.	Meadow.					22.9	19.3	29 1	32.9	37.0	42.9	39.0	39.8		34.8
23	E. F. Smith, Tunbridge, Vt.	'78	Loam.	do.	Wet.	do.	Corn.		Var.	Fav.		29.7	35.0	35.0	32.5	35.0	32.5	35.0	3 .5	27.5	40.0
24	L. W. Stone & Son, Waverly, Pa.	'78	Clay loam.	Loose.	Dry.	Cl. h'pan.	Meadow.	Warm.	Wet.	do.		28 7	35.6	37.5	35.6	38.7		41.9	51.2	32.5	32.5
25	Halsey P. Clark, Wyoming, R. I.	'78	Loam.			do.	do.					26 3	35.1	49.5	35.1	64.4		67.4	86.1	55.6	48.1
26	Zeno Benson, Bridgewater, Mass.	'79	do.	Light.	Dry.	Loam.	Pasture.	Med.	Med.	Fav.		23.9	16.0	26 2	11.0	44.2	14.3	21.4	37.5	19.0	14.0
27	C. Miller & Son, Pomfret, Vt.	'78	do.	do.	Med.	Cl. h'pan.	Meadow.	Var.	Wet.			20.2	40.5	57 2	30.0	67.9		71.0	70.5	23.0	60.0
28	do. do. do.	'79	Snd. loam.	do.	Dry.		do.		Dry.	Fav.		21.9	27.5	33.7	23.7	30.0	31.2	28.7	38.7	34.7	15.0
29	Seth P. Rising, Rupert, Vt.	'78	do.	Loose.	do.	Gravelly.	Corn.	Var.	Var.			27.5	51 9	40 0	49.1	47.1	52 4	47.4	53.7	40.0	52.6
30	Charles B. Gale, Plainfield, Vt.	'78	do.	Light.	do.	Yel. loam.	Meadow.			Unf.		20.5	43.7	43.7	39.9	46.3	26.0	33.4	41.1	33.0	29.6
31	J. M. Manning, Taunton, Mass.	'79	do.	do.	Med.	Sand.	Fallow	Var.	Var.	Fav.		22.7	13.8	49.4	45.7	54.5	42.1	56.1	65 0		58.5
32	J. E. Chedel, Pomfret, Vt.	'79	do.	do.	do.	do.	Meadow.	do.	do.	Unf.		25 4	22 0	28.6	37.7	31.3	33.4	47.1	57 5	38.0	55.0
33	W. S. Simmons, Duxbury, Mass.	'79	do.	Loose.	do.	do.	Rye.	do.	do.	do.	30-50 bu. pr. acre unm'd	20.0	22.3	20.0	24 6	37.0	44.3	24.6	19.4	14.0	
34	Jonathan Dunham, Etna, N. Y.	'78	Gr. loam.	Light, l'se.	Dry.	Stony clay.	Meadow.	do.	do.			24.0	18.5	30.5	20.5	32.0		32.0	31.0	26.0	36.5
35	E. N. Bissell, East Shoreham, Vt.	'79	Clay loam.	Compact.	Wet.	Clay.	Meadow.			Unf.		32.5	37.5	40.0	55.0	50.0	42.5	41.2	41.2	30.0	4 .5
36	A. B. Clark, Milton, N. Y.	'78	Loam.	Light, l'se.	Dry.	Compact.	do.			Fav.		33.6	41.0	34.0	45.2	42.3		44.1	51.0	32.0	39.5
37	J. L. Dow, Weare, N. H.	'79	do.	do.	do.	Hardpan.	Corn,	Cold.	Var.	Unf.		41.0	44 0	80 0	73.0	70.0	50.0	64.0	64 0	44.0	
38	M. W. Ladd, Woodstock, Vt.	'78	Snd. loam.	do.	do.	Loose.	Meadow.	Warm.	Var.	Fav.		30 5	37.2	36.6	35.0	39.3		42.7	42 7	31.0	47.5
39	H. Bradley, Brattleboro, Vt.	'78	do.	do.	do.	Sand.	Pasture.					33.0	32.0	31.0	39 3	34.4	30.0	39.6	40 0	27.0	45.0
40	Wm. F. Segar, Wyoming, R. I.	'78	do.	do.	Med.	Clay loam.	Meadow.	Var.				32.8	41.8	32.8	45.3	48.5		64.8	72 3	39.0	
41	H. Pitts, Washington, D. C.	'79	do.	Light.	Dry.	Clay.	Pasture.	Hot.	Dry.	Unf?		25.6	35.7	34.7	27.5	28.3	28.2	29.0	28 2	23.8	
42	Edward Hicks, Old Westbury, N. Y.	'79	do.	do.	do.	Loam, gr.	Meadow.			Fav.		37.8	53.3	54 5	59.6	69.6	82.2	76.5	82.7	58.7	55.3
43	W. Ellason, Chestertown, Md.	'79	Gr. loam.	Compact.	do.	Clay.	Grain.		Dry.	Unf!		34.0	24.3	45.7	31.6	45.6	24.4	48.8	35.7	46.2	
44	H. F. Stevens, Wayne, N. Y.	'78	do.	Loose, l'gt.	Dry.	Clay, st'ny.	Clover.		do.	do.	30-40 bu. unmanured	33 3	31 0	67.5	34.5			61 5	71.8		
45	H. M. Swift, Chestnut Ridge, N. Y.	'79	do.	do.	do.	Loose.	Meadow.	Warm.		Fav.		36.8	60 9	48 6	63 5	62 8	51.9	60.4	63.3		69.0
46	James K. Toby, Calais, Vt.	'78	Loam.	do.	do.	Compact.	Potatoes.	Cool.	Dry.	Fav.		45.1	8 3	62.6	70.2	68.5	49.9	59.2	70 3	42.6	45.2
47	C cero Blake, Kent, O.	'78	do.	Light, l'se.	do.	Clay & gr.	Meadow.	Warm.	Var.	do.		49.8	58.0	56.0	58.4	63.3		63.0	64.0	53.0	65.0
48	Ora Paul, Woodstock, Vt.	'78	do.	do.	do.	Clay.	do.	do.	do.	do.		64.9	63.5	64.7	64.3	65.9	69.1	69.3	80 6	65.7	76.7
49	Edw. Hicks, Old Westbury, N. Y.	'78	Snd. loam.	do.	do.	Loam.	Corn.			do.		45.2	60.0	51 0	37.8	54.3		57.3	76 0	48.3	66.8
50	Chester Sage, Middletown, Conn.	'79	Gr. loam.	Compact.	do.	do.	Meadow.			do.		42.0	49.2	46.0	59.0	41.1	58.0	63.4	60 8		44.3
51	H. C. Loose, Hagerstown, Md.	'79	Calcar'us.	Loose.	do.	Clay.				do.		46.7	52.0	61.0	54.5	47.5	48.5	68.5	75.5	64.0	
52	James D. Winslow, Pittsford, Vt.	'79	Sandy.	Light.	do.	Sand.	Meadow.	Var.	Var.	do.		41.7	59.6	42.2	41.1	57.0	37.0	60.0	60 0	37.5	51.4
53	W. H. Philbrook, N. Hampton, N. H.	'79	Gravelly.	do,	do.	Gravelly.	do.	do.	do.	do.	40-50 bu. unm'd	44.0	60.0	73.8	56.2	65.0	57.5	61.2	81.2	45.0	
	POTATOES.																				
54	Prof. W. H. Jordan, Orono, Me.	'79	Heavy cl.	Compact.	Wet.	Heavy cl.	Potatoes.	Cold.	Wet.	Unf.		37	47.0	38.0	73.0	47.0	59.0	111.0	120.0	35.0	116.0
55	W. I. Bartholomew, Putnam, Conn.	'78	Loam.		Med.	Compact.	Meadow.	Med.	Med.	Fav.		130	162.0	200.0	125.0	210.0		220.0	250.0	150.0	
56	do. do. do. do.	'79	do.	Loose.	do.	do.	do.	Cold.	Wet.	Unf.		42	32.0	62.0	33.0	96.0	42.0	98.0	109.0		56.0
57	Edw. M. Snow, Lunenburg, Vt.	'79	Dark lo'm.	do.	Dry.	Loam, cpt.	Oats.	Var.	Var.	Fav.		37	45.0	136.0	49.0	117.0	41.0	145.0	172.0	41.0	
58	Chas. H. Cole, Lunenburg, Vt.	'79	do.	Medium.			do.					150	180.0	175.0	215.0	220.0	260.0	360.0	370.0	150.0	470.0
59	James K. Toby, Calais, Vt.	'78	Loam.	Loose.	do.	Compact.			Cool.	Dry.	Fav.	133	127.0	127.0	136.0	154.0	122.0	115.0	133.0	132.0	129.0
60	R. P. Walcott, Holland Patent, N. Y.	'78	do.	Light, l'se.	do.							1 5	102.0	105.0	140.0	150.0		162.0	185.0	100.0	115.0
61	S. W. Crocker, St. Albans, Me.	'78	do.	Light.	do.	Hardpan.	Meadow.	Var.	Var.			60	76.6	100 0	93.3	106.6		150.0	170.0	93.3	146.0
62	Zeno Benson, Bridgewater, Mass.	'79	do.	do.	do.	Loam.	Pasture.	Warm.	do.	Fav.		46	67.0	91 0	46.0	84.0	45.0	79.0	124 0	60.0	53.0
63	Hiram A. Cutting, Lunenburg, Vt.	'78	Yell'w lm.	do.	do.	Hardpan.	Meadow.		do.	Unf.		33	40.0	80.0	20.0	100.0	60.0	100.0	110.0	60.0	80.0
64	J. H. Stiles, Morris Plains, N. Y.	'78	Snd. loam.	Light, l'se.	Med.	Cl. h'pan.			Var.	Wet.	do.	31	30 8	28 4	69.0	37.2		76.4	75.6	31.6	
65	J. R. Kinerson, Peacham, Vt.	'78	do.	do.	Dry.	Sandy.	Meadow.	do.	do.			133	13.9	138.0	160.0	149.0	137.0	165.0	200.0		
66	E. G. Riest, Spring Garden, Pa.	'79	Calcar'us.	Light.	Med.	Clay.	do.	Cold.	Dry.	Unf.		62	59.0	67.0	66 0	53 0	56 0	53.0	52 0	63 0	
67	John Labrum, Lee, Mass.	'79	Calc. gr.	do.	Dry.	Calc. gr.	Pa ture.		Wet.	do.		45	56.0	52.0	72 0	54.0	66 0	88.0	98.0	60 0	
68	P. M. Raidabough, Glen Rock, Pa.	'79	Gravelly.	do.	do.	Clay.		Var.	Dry.	do.		29	85.0	69.0	38.0	84.0	55.0	76.0	72 0	55.0	76.0
69	Seth P. Rising, Rupert, Vt.	'79	do.	Loose.	do.	Gravelly.		do.	Var.	do.		80	105.0	110.0	175.0	94.0	125.0	80.0	145 0	90.0	120 0
70	Henry Arey, Yarmouthport, Mass.	'79	Snd. loam.	Light.	Dry.	Yel. sand.	Corn.	Warm.	Dry.	Fav.			133 0	152.0	140.0				213.0		182.0
71	Moody P. Marshal, Lancaster, N. H.	'78	Stony.	do.	Med.		Oats.			do.		141	133 0	165.0	209.0	206.0		247 5	270.4	158.0	215 4
72	do. do. do.	'78	do.	do.	do.		do.					121	117.0	168.0	214.0	176.0		145.0	167.0	123.0	170.0
	SWEET POTATOES.																				
78	A P. Arnold, Vineland, N. J.	'78	Snd. loam.	Loose.	Dry.	Sand.	Corn.		Var.	Unf.		68	91.0	77.0	110.0	93.0		166.0	177.0	60.0	
74	do. do. do.	'78	do.	do.	do.	do.	do.		do.	do.			120 0	130 0	140.0	120.0		140.0	170.0		
75	M. Cheseboro, Mandarin, Fla.	'78	Sandy.	Compact.	Med.	do.	Potatoes.					40	159 0	59.0	189.0	92 5		92.5	212.0		
76	Chas. Parry, Cinnaminson, N. J.	'78	do.	Light.	Dry.	Snd. & gr.	Asparagus					73	141.0	73.0	194.0	145.0	194.0	218.0	290.0		290.0
	TURNIPS.																				
77	Prof. J. R. Farrington, Orono, Me.	'78	Clay.	Compact.	Molst.	Cl. h'pan.	Meadow.					225	285 0	315 0	240.0	428 0	203.0	413.0	518 0	263.0	300.0
78	James H. Toby, Calais, Vt.	'78	Loam.	Loose.	Dry.	Compact.	Potatoes.	Cool.	Dry.	Fav.		516	565.0	615.0	583.0	593.0	661.0	656.0	785 0	673 0	539.0
79	H. M. Swift, Ches nut Ridge, N. Y.	'79	Gr. loam.	Coarse.	do.	do.	Grapes.	Warm.		do.				212.0		151.1		134.4	201.6		242.0
	OATS.																				
80	Dr. H. A. Cutting, Lunenburg, Vt.	'79	Loam.	Light.	do.	Gravel.	Potatoes.	Cold.	Wet.	Unf.		15.6	15.3	45 6	10.0	58.7	54.4	28.1	40 0	27 8	26.9
81	S. D. Burrows, Basking Ridge, N. J.	'79	Snd. loam.	do.	do.	Clay & gr.			Dry.	Fav.		23.1	31.9	32.5	25.6	45.0	30.0	31.9	43.1	22.5	
	COTTON—POUNDS PER ACRE.																				
82	J. J. Dearing, Covington, Ga.	'78	Red clay.	Compact.	Dry.	Red clay.						104	33.	242.	66.	509		477	693	44.0	
83	do. do. do.	'79	Grey land.	Light.	do.	Porous.	Cotton.		Wet,	Unf.						1304	819.	1035	1023		
	SUGAR BEETS.																				
84	Henry Lane, Cornwall, Vt.	'78	Clay loam.			Slate rock.	Onions.					795	1013	1174	852	1116	988.	1091	1119	961.	
	COW PEAS.																				
85	Willard R. Hall, Albion, Fla.	'78	Sandy.	Lgbt.	Dry.	Yel. sand.						3.0	4.0	5.0	6 0	6.0		8.0	10.0	4.0	

(1) "Grey land." * In experiments 5, 6, 9, 21, 22, 50, and 56, only 150 lbs. per acre were applied. † Including market price plus $5.00 per ton for freight.

No. **3,** as the experiment will be more conclusive.

It is particularly recommended that other fertilizers than those in the sets be applied on parallel plots of exactly the same size.

"As to crops, a large majority of the experimenters have heretofore selected Corn and Potatoes, probably because they are easy to manage, but more trials made with Grain, Grass, Sorghum, and Root Crops, and in the Southern States, Cotton, Sugar Cane, and Cow Peas, are particularly desirable. The need of more information about all our staple crops, and the best way to grow them is imperative. The accounts already given have shown how useful these experiments are, and those who make and report them well are public benefactors."

To the experimenters of last season we especially urge the importance of repeating the trials through a series of years. We trust as many as can will continue their good work, and report results.

How to Procure the Fertilizers.

No profit to any one is involved in this scheme; those who supply the fertilizers do so at the bare cost (or less); while some articles have advanced since last year, they do not increase the price of the experimental sets; they look for their profit in the increased sales of fertilizers that must naturally follow. The *American Agriculturist* receives not a cent for its share of the work, but will find its profit in the increased prosperity of the farmers who turn the experiments to the best account. It is, of course, supposed that every farmer sensible enough to try experiments, is a reader of the *American Agriculturist*, yet we would say that the offer is not confined to these, but is open to all. The parties who furnish the sets are (placed alphabetically):

Henry J. Baker & Bro., 215 Pearl St., New York.

Bowker Fertilizer Co., 43 Chatham St., Boston, and 3 Park Place, New York.

Mapes' Formula and Peruvian Guano Co., 158 Front St., New York.

These are all first class houses, who will each put up precisely the same articles, and our readers may send their orders (accompanied by the cash) to any one of them. If any prefer to send their orders to this office, we will hand them to the dealers, referring to Boston those which can be best served from that point.

We have only to ask that each farmer study carefully the directions and the Pamphlet accompanying each set, that he may have a clear idea of what he is expected to do in order to make his experiments useful to himself, and consequently, to others.

Science Applied to Farming—LVI.

General Results of the Farm Experiments.

The Table on page 136 gives examples of the experiments with fertilizers in 1878 and 1879, and the one on tbis page general averages of results. I commend tbeir study to all thoughtful farmers.

1. It must be remembered that the trials were not only subject to all the vicissitudes of weather and season, but were made on soils of all sorts, but mostly very much run down. The directions were to select worn out soils. Hence the average results with a given crop do not fairly represent what might be expected on soils adapted to its growth and in average condition.

2. As would be expected, the results of the two seasons agree in the main, though with the less favorable weather of 1879 the crops averaged less than those of 1878.

The Effects of the Different Fertilizers.

3. The "Complete Chemical Fertilizer," tbe mixture of 300 lbs. Superphosphate, 150 to 200 lbs. Potash Salt, and 150 lbs. Nitrate of Soda, costing $15.38 per acre (including $5 per acre for freight), brought the largest crops, excelling even the farm manures with all tbe crops on which the number of experiments is large enough for a fair comparison. But it must be remembered that this mixture was proposed to test soils and not to bring large yields, and does not show how well chemical fertilizers may do. The "complete fertilizers" prepared by reliable dealers for special crops, are of course more appropriate for them and would give better results than tbe mixture.

4. The mixture of superphosphate and potash salt, costing $9.25 per acre, brought a trifle less corn and decidedly more potatoes than farm manures.

5. The mixture of nitrate of soda and superphosphate, which corresponds closest of all to the ordinary ammoniated superphosphates, fish manures, and guano, though costing more than the mixture of superphosphate and potash salt, brought less increase of corn, potatoes, turnips, sweet potatoes, and indeed of every crop but oats. The number of experiments with oats, however, is too small for any general conclusions. It is very probable that they and the cereals generally would be more helped by nitrogen, and less by potash, than the other crops. But it is a question whether manufacturers of ammoniated phosphates would not do better to substitute potash salts for the nitrogenous materials in compounding tbeir fertilizers, at least for some crops. The mixture of nitrate of soda and potash salt the least efficient of all.

6. As to the efficiency of the materials separately, the nitrate of soda hy itself was seldom of much use, the sulphate of lime was frequently, the muriate of potash very often, and the superphosphate generally profitable. Doubtless considerable of the effect of the superphosphate was, in many cases, due to tbe sulphuric acid and lime.

7. As to the effect of ashes, the results are variable, though generally tbey were efficacious.

8. One of the chief defects of these experiments is that so few parallel trials with lime were made. There are many cases in which a dressing of lime is the cheapest and best means of improving the land.

Artificial Fertilizers vs. Farm Manures.

9. Not only did the "Complete Chemical Fertilizer" bring a larger average increase than farm manures as actually used; and the mixture of superphosphate and potash salt nearly as large average increase, but the quality of tbe crop was generally better with the chemicals than with the farm manures. Potatoes, especially, were finer in quality and less disposed to rot with the artificial fertilizers than with the farm manures.

As to Mode of Applying the Fertilizers, Whether Broadcast, or in the Hill or Drill.

The results are on the whole against applying in the hill or drill. The best results in the majority of cases came when the fertilizers were sown broadcast. Several of the very best were where the materials were scattered over a strip a couple of feet or so wide along the rows. Many of the worst results came when the fertilizers were put in the hill or drill. The nitrate of soda and potash salts thus applied often injured the crops, especially in dry weather.

Effects of the Fertilizers on Different Crops.

10. Potatoes and turnips responded most profitably to the "Complete Fertilizer," in nearly every case. Corn, on the other hand, was largely helped by the superphosphate and potash salt, but received little benefit from application of nitrogen in any form.

The Feeding Capacity of the Plants.

11. The experiments imply that the Corn was some how able to gather nitrogen from natural sources, provided it had enough of the mineral ingredients at its disposal. They do not tell how much of the nitrogen came from the roots of the preceding crops, how much from other nitrogen compounds in the soil, and how much from the air. Tbey imply that potatoes possess in far less degree than corn the power of gathering sufficient supply of either nitrogen or the other ingredients of its food from soil and air. They imply that turnips are generally unable to obtain enough phosphoric acid from the soil, and are greatly helped by it in fertilizers; that without its application they usually get but little good from other materials; that with it alone they can generally g ther but a partial supply of the otber materials of tbeir food; and that for a full yield considerable quantities of all the soil ingredients of plant food are needed close at hand and in available forms. But except on corn and potatoes these experiments are still too few for reliable data.

The Best Fertilizers for Different Crops.

12. Tbe most profitable material in a given case is that which is best fitted to its needs. The chief factors of tbe problem are: *first*, soil; *second*, season; *third*, feeding-capacity of the crop, its power to gather its food from soil and air; *fourth*, form of combination of the ingredients of the fertilizers; *fifth*, the indirect action of the fertilizer.

Soils vary in respect to the plant food they supply in available forms. Phosphoric acid is most often deficient; next come potash and nitrogen; then, lime and sulphuric acid, and rarely magnesia. But the infertility of soils is due to physical causes perhaps nearly as often as to chemical. Soils often do not have the proper texture, they are too compact or too loose; or they lack absorptive power, they cannot retain the plant food until plants use it but suffer it to be leached away by drainage water; or the moisture supply is had, they are too wet or too dry. These defects are as fatal as lack of plant food. Many soils need amendments first and then manure. Drainage, irrigation, tillage, use of lime or muck are often the cheapest if not the only means for bringing up poor soils. *Season* counts for much, often for everything, in the action of manures.

The effects of the *forms of combination* of the ingredients, *i. e.*, of phosphoric acid in bone as compared with superphosphate, of potash as sulphate *vs.* muriate, were not tested. Nitrogen in different forms was used in some special experiments with, on the whole, the best results from Peruvian guano, next from a mixture of nitrate of soda, sulphate of ammonia and dried blood, and the worst from these last separately. As to the indirect action of fertilizers in improving the texture of the soil and setting its plant food free, tbe experiments have nothing to say, but we know that it often makes a large part of the usefulness of the fertilizer.

13. Leaving differences of soils out of account, and considering the average results of tbe experiments; the best among the materials used to produce large crops of *Corn* would probably he a mixture of Peruvian guano and potash salt, with perhaps tbe addition of some fine ground bone or superphosphate. The most profitable mixture would probably consist of muriate of potash with either superphosphate or fine ground bone, or both. In a number of special experiments on corn a mixture of 300 lbs. of superphosphate and 150 lbs. of muriate of potash, which can be bought in the larger markets for $7.50 to $8.00, brought on the average 50½ bushels of shelled corn per acre.

14 For *Potatoes*, which responded well to all the materials, probably a mixture of Peruvian guano, or fish with potash salts would be generally profitable. For either corn or potatoes, nitrate of soda, sulphate of ammonia, dried blood, or better, a mixture of these, could be advantageously used to supply the nitrogen, and superphosphate or bone-dust or a mixture of the two, for the phosphoric acid.

15. The common impression among farmers that the best use of artificial fertilizers is to supplement farm manure is doubtless, in ordinary circumstances, correct. The right way is to make the most and best manure that is practicable upon the farm, and piece out with such commercial fertilizers as experiments and experience prove profitable.

16. I derive no formulas for fertilizers from these experiments. There are many cases in which complete fertilizers are in place and many more in which the farmer does not know what his soil and crops need.

Middletown, Conn. W. O. ATWATER.

Averages of Results of Experiments of 1878 and 1879.

Produce, Increase, and Gain or Loss per acre, with different Fertilizers and Crops.

Number of Plot.....	0	A	B	C	D	E	F	G	H	F M
Kinds and Amounts of Fertilizing Materials Applied per Acre.	*No Manure.*	*Nitrate of Soda, 200 lbs.*	*Dissolved Bone Black, 300 lbs.*	*Muriate of Potash, 200 lbs.*	*Nitrate of Soda, 150 lbs. Dissolved Bone Black, 300 lbs.*	*Nitrate of Soda, 150 lbs. Muriate of Potash, 200 lbs.*	*Dis. Bone Black, 300 lbs. Muriate of Potash, 200 lbs.*	*Nitrate of Soda, 150 lbs. Dis. Bone Black, 300 lbs. Muriate of Potash, 200 lbs.*	*Plaster, 200 lbs.*	*Farm Manures.*
Valuable Ingredients Applied per Acre.		*Nitrogen, 32 lbs.*	*Phos. Acid, 48 lbs.*	*Potash, 100 lbs.*	*Nitrogen, 24 lbs. Phos Acid, 48 lbs.*	*Nitrogen, 24 lbs. Potash, 100 lbs.*	*Phos. Acid, 48 lbs. Potash, 100 lbs.*	*Nitrogen, 24 lbs. Phos. Acid, 48 lbs. Potash, 100 lbs.*	*Sulphuric Acid and Lime.*	*Complete Fertilizer. Variable.*
Cost per Acre		$7.50	$5.25	$4.50	$10.88	$10.13	$9.75	$15.38	$0.80	var'ble
Avr'ge Yield pr. acre	bu.	bu.	bu.	bu.	bu.	bu.	bu.	bu.	bu.	bu.
CORN—53 Exp's in '78&'79.	24.3	30.4	35.2	33.3	38.8	36.8	41.8	47.6	29.0	44.6
POTATOES—18 Ex. '78,'79.	75.4	89.1	106.1	107.4	108.2	94.3	137.2	159.2	87.6	132.2
‡ CORN, '37 Exper's { Produce		30.1	34.0	38.7	40.0	23.4	41.5	47.9	24.8	43.5
‡ CORN, '37 Exper's { Increase		8.8	12.7	17.4	18.7	2.1	20.2	26.6	2.5	21.2
‡ POTATOES 14 Exper's { Produce	75.0	85.7	97.9	109.0	114.9	92.0	134.9	156.6	87.3	13.9
‡ POTATOES 14 Exper's { Increase		10.7	22.9	34.0	39.9	17.0	59.9	81.6	12.3	56.9
SWT.PO'S—4 Exp's in '78.	58.7	127.7	89.7	158.2	115.1	194.0	154.1	214.2	60.0	200.0
TURNIPS—3 Ex. in '78,'79.	245.0	283.0	391.0	274.0	391.0	288.0	401.0	501.0	312 0	374.0
SUG. B'TS—1 Experiment	795.3	1013.3	1174.0	851.4	1116.0	988.3	1090.6	1118.6	960.6	
OATS—8 Experiments....	19.4	23.6	38.6	17.8	51.8	42.2	30.0	41.8	25.2	26.9
Avr'ge Inc'e pr.acre										
CORN—53 Experiments...		6.1	10.9	9.0	14 5	12.5	17.5	23.3	4.7	20.3
OATS—8 do.		4.2	9.2	1.6	32.4	22 8	10.6	22.4	5.8	7.5
POTATOES—18 do		13.6	30.7	32.1	32.8	18.9	61.8	76.8	12.2	56.8
S. POTATOES—4 do.		72.0	81.0	99 5	56 4	135.3	95 4	155.5	1.3	231.3
TURNIPS—3 do.		38.0	146.0	29 0	146.0	43.0	156.0	256.0	67.0	129.0
SUG. BEETS—1 do.		218.0	378.7	56.0	320.7	193.0	294.3	323.3	164.3	

Gain or Loss per Acre.

	No	A	B	C	D	E	F	G	H	G
CORN.....	5	†1.54	1.30	1.10	8.62	†0 38	12 38	5.51		
	6	†6.02	17.47	†3.89	15 76	†9 80	18.50	15 73		
	7	†3.55	†5.63	†6.09	†7 45	†5 65	†4.38	†13 60	4.49	16.94
	9	3.71	†0.74	34.0	†8 17	31.68	33.57	34 40		
	16	†1.13	9.99	†12.58	21.68	17.43	21 08	46.35	2 55	†1.98
	22	1.95	1.85	5.95	6 02	13 52	10 47	8.22	8.55	
	24	0.94	†1.25	11.03	†10.80	4.60	9.30	1.49		
	27	0.86	13.55	†2.20	12 30	†5.62	15.25	7.14	†2.26	1.95
POTATOES.....	57	†5.31	†12.44	†3.41	14 25	20.60	†6 94	27.73	0.47	
	61	0.50	20.60	19 00	18 00	51.70	59 50	25 50		
	65	†8.17	†5.67	6 66	†7.10	†12.84	0.33	13 33	3.16	
	69	25.80	18.59	7 22	27.59	6 52	19 37	11.61	14.34	17.12
TURNIPS	77	3.37	14.75	†4.88	35 37	†20.12	33 87	52.62	6.50	
SWEET POTATOES....	74	52.0	59 0	65 00	48.00	59 00	68 00			
OATS.....	80	†6.74	10.83	†7.22	12 48	†2.79	11.05	0 62	6 02	

* As calculated by the experimenters by subtracting the cost of fertilizers, freight, and applying, from value of increase over no manure. † Loss.

‡ Including only those in which farm manures were tested with the chemical fertilizers.

A Farm House Costing $1,500.

BY S. B. REED, ARCHITECT.

These designs are for a substantial country dwelling, arranged to meet the requirements of farmers in moderate circumstances, and give as much accommodation and convenience as can well be done for the sum named. [This design, which was made

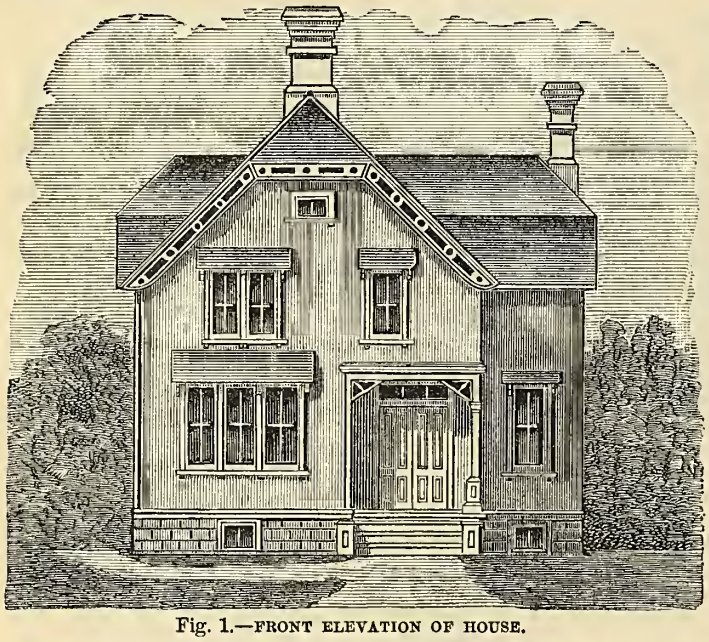


Fig. 1.—FRONT ELEVATION OF HOUSE.

to meet certain requirements, has many excellent features, but were we to build such a house we should, instead of the limited porch, run a broad veranda or piazza across the whole front. Were this done, the space now occupied by the porch could be thrown into the Hall or Entry, which, in a country house, is often one of its most useful rooms. This of course would add a little to the expense, but would be money well invested.—EDS.].....**Exterior** (fig. 1).—The extreme ground measurements are 30 by 40 feet, giving a breadth becoming its relation as a farm house, with the surrounding grounds. The Foundations show 2 feet above the earth grades. Unless the site is already very high, the earth taken from the excavations should be used in raising the surface of the grounds at least one foot immediately surrounding the foundations, so as to turn away all

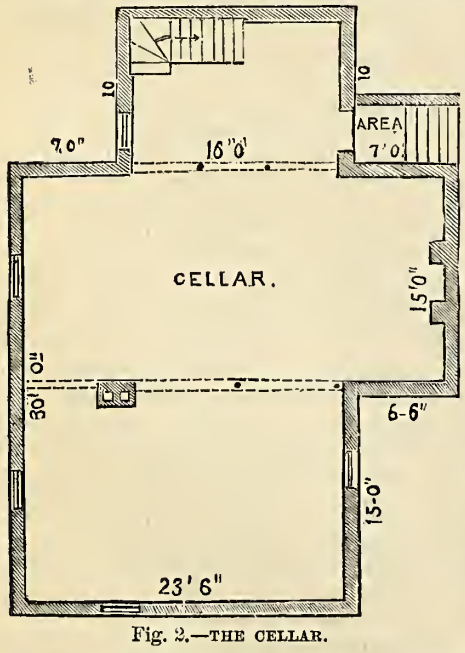


Fig. 2.—THE CELLAR.

water, and also to give increased hight and better appearance to the whole building. The simple methods shown in the treatment of the porches, windows, cornices, gables, roofs, and chimneys, give the whole a rustic appearance quite in accord with its domestic intent....**Cellar** (fig. 2).—Hight, 6½ feet; dimensions same as first story, giving abundant cellar room, which may be divided into separate apartments for vegetables and other uses. If there is a porous or sandy bottom, and proper ventilation, it will be sufficiently cool and dry for keeping fruit with good success. Six small windows built in the walls, afford light and ventilation to all parts. An opening in one of the flues of each chimney will carry off unwholesome vapors when the windows are closed in winter. There is an outside entrance under the rear porch, and an inside stairway leading to the rear entry on the first floor, with a door at the top. This location of cellar stairs prevents cellar odors and dust from coming by them directly into the body of the house....**First Story** (fig. 3).—Hight of ceilings, 10 feet. The front entrance is from a porch through double doors, to a hall which communicates with the parlor and kitchen, and contains the main stairs. The Parlor is square floored, with windows in two sides, and a marble shelf. The Kitchen is the largest apartment, and intended as the family living-room. It is convenient to a pantry, closet, and rear entrance. The Pantry is thoroughly shelved, and has a small window. The Closet is formed in the space under the front stairs, and is shelved. The Rear Entrance is from a covered porch to the Entry, the latter is sufficiently large to contain the wash-tubs, and relieve the kitchen of much of the heavy work. The Bed-room is conveniently arranged, and may be entered from the parlor or kitchen. It has two windows, a closet, and a marble shelf....**Second Story** (fig. 4).—Hight in main house, 6 feet at the plates, following the rafters to the full hight of 8 feet. The divisions embrace a hall, four sleeping-rooms, four closets, and a store-room and garret. The Chambers are commodious, have windows in two sides of each, and adjoin chimneys, giving opportunity for stoves when required. The Flues of the kitchen chimney are divided in the second story, admitting a window between, and are brought together over an arch above the window. A Tank shown in a closet fills half of its hight; the balance of the space may be used as a closet. The Store-room might be used as a bed-room if required, and receive light from the rear window through a sash door....**Construction.**—The excavations are made 3½ feet deep. The foundations and chimneys are of hard bricks and good mortar (or stone may be used where cheaper). Frame of sawed timber, as indicated in the estimate below. Siding of wide "Novelty" pattern. Principal cornices of dressed pine, projecting 18 inches, and having in the gables verge boards of open panel-work. Roofs are set at an angle of 45°, and covered with pine shingles laid on 1½ by 2-inch lath. Floors of tongued and grooved spruce, 8 inches wide. Plastering, white finish upon two coats of brown mortar. Stairs of pine. The principal flight having a newel, rail, and ballusters of black-walnut. The principal windows have four-light sash hung to balance weights. Cellar sash two lights hung with butts to swing upwards. Doors are panelled and molded, and have hard-wood saddles. The plumbing is similar to that described and illustrated in the March *American Agriculturist*. Marble shelves, with appropriate stucco trusses, are set in the parlor and each chamber. Painting inside and out, two coats of best lead and oil.....**Estimate.**—Cost of materials and labor.

144 yards Excavation, at 25c. per yard	$ 36 00
14,000 Bricks, Foundations and Chimneys, at $12 per M.	168 00
24 feet stone steps, at 12c. per foot	2 88
600 yards Plastering, at 25c. per yard	150 00
4,000 feet Timber (as follows), at $15 per M.	60 00
Sills 4x8 in., 144 ft. long. Plates 4x6 in., 90 ft. long.	
9 Posts 4x7 in., 17 ft. long. Girts 4x6 in., 38 ft. long.	
2 Posts 4x6 in., 10 ft. long. 14 Beams 3x8 in., 24 ft. l'ng.	
Ties 4x6 in., 175 ft. long. 30 Beams 3x8 in., 15 ft. l'ng.	
20 Rafters 3x4 in., 18 ft. l'ng. 5 Beams 3x8 in., 15 ft. l'ng.	
26 Rafters 3x4 in., 13 ft. l'ng. Porch 3x7 in., 24 ft. l'ng.	
2 Valleys 3x8 in., 16 ft. l'ng. Ridges 2x8 in., 52 ft. l'ng.	
100 Joist, at 15c. each	15 00
250 Wall Strips, at 11c. each	27 50
235 Siding, at 28c. each	65 80
Cornice materials	32 00
300 Shingling Lath, at 6c. each	18 00
45 bunches Shingles, at $1.25 per bunch	56 25

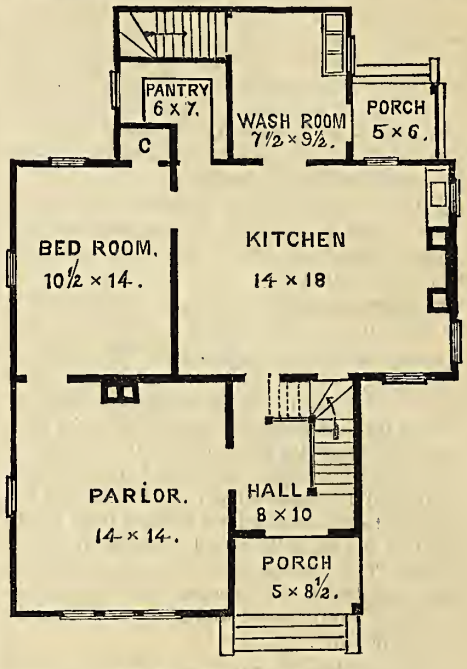


Fig. 3.—THE FIRST STORY.

200 feet Tin (in Valleys, Gutters & Leaders), at 10c. p.ft.	20 00
200 Flooring (inside), at 28c. each	56 00
18 Flooring (outside), at 25c. each	4 50
2 Stairs (complete)	40 00
2 Porches details (complete)	20 00
5 Cellar Windows (complete), at $3 each	15 00
20 Plain Windows (complete), at $7 each	140 00
21 Doors (complete), at $6 each	126 00
5 Marble Shelves, at $4 each	20 00
Closet finish (complete)	15 00
Plumbing, $40; Carting, $20	60 00
Carpenter's Labor not included above	175 00
Painting, $175.00; Incidentals, $4.07	180 07
Total cost	$1,500 00

Agricultural Art and Science.—Prof. W. H. Brewer, Yale College, in his address before the Am. Agr'l Association, spoke at some length upon the *Art of Agriculture* in distinction from the *Science of Agriculture*. The *Art* is old—almost as old as the race; it varies with the locality and the traditions of the times. The *Art* is *local* and *changeable*. On the other hand the *Science* is new—very young—and mostly confined to our own generation; it deals with principles that are *fixed* and *general*. When the art, that is, the practice of agriculture, is founded upon, and is the application of well founded principles—*Science*—then we may expect successful and progressive farming.

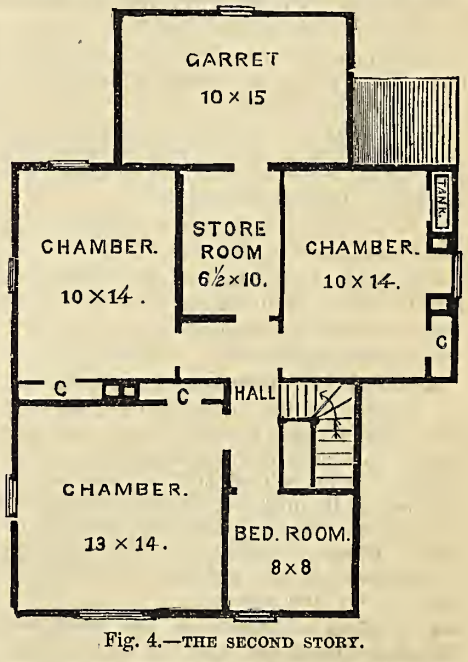
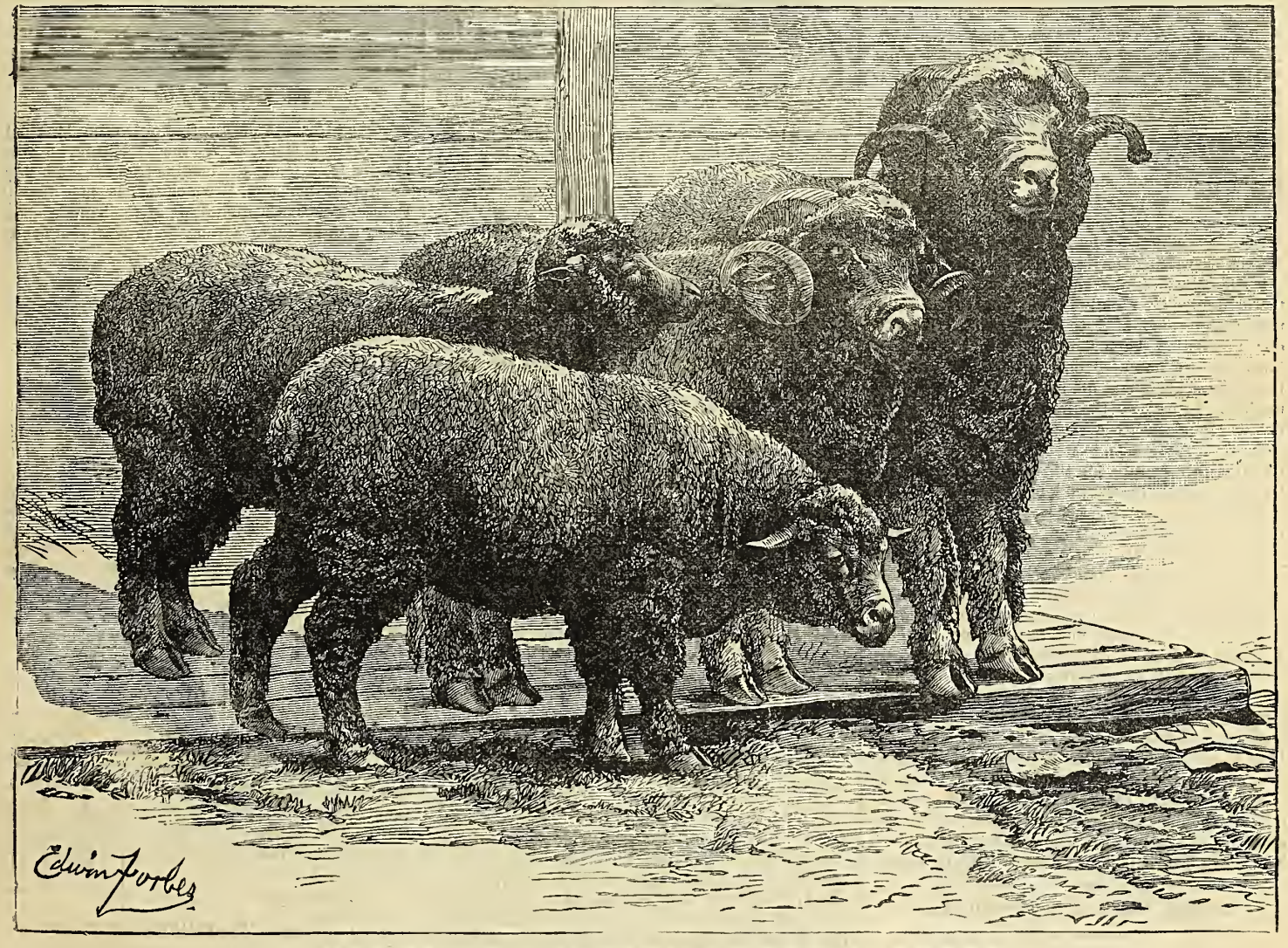


Fig. 4.—THE SECOND STORY.

American Merino Sheep.

Sheep-raising has formed an important part of the husbandry of most nations from the early historical times. Each country has had its peculiar breeds marked by characters, due in a great degree to the modifying influences of climate, and in part to a rude selection. In some cases these breeds have reached a high degree of development, while in other countries the flocks have shown no improvement for centuries. This country, young as it is, has made its contribution to the list of useful breeds in the *American* Merino. Our climate and pastures have better satisfied the wants of this fine wool-bearing animal than those of its native country, and now the American Merino stands at the head of the fine-wool sheep of the world. This breed would seem to have reached that point in its development where it appears of but little use to try to further improve it. The first importations of Merino sheep into this country were made early in the present century, and consisted of very choice animals from the best families of Spain. The most extensive importations were those of Hon. Wm. Jarvis, the American Consul at Lisbon, in 1809 and 1810, who sent over nearly 4,000 head. From these Spanish sheep as a basis, and by means of careful crossing, breeding, and selecting from several distinct flocks, the present Merino has been produced, and is now so unlike other Merinos as to take rank as a distinct breed with the prefix "American." The accompanying engraving gives a group of these American Merino sheep. The ram, with his short, thick neck, straight and broad back, and general plumpness is an animal which unites a vigorous constitution with great beauty—as beauty is regarded in sheep—as seen in his fine head and pleasing outline. His wool is of medium length, thick and fine, and extending well down to the toes. It can not be said of him that he is "hide bound;" the much esteemed wrinkles being large and sufficiently abundant to annoy the shearers, and to entirely meet the requirements of breeders, who regard this mark as important in an animal with which to improve the smooth-skinned native sheep.

The sheep industry in the United States is vast and important, and in the consideration of which there are two partially distinct, and at the same time, interlocking interests. Sheep were in early times grown almost solely for their wool, and with the annual shearing came the year's income; but in later times, and never so prominently as now, the carcass is looked upon as an important item in sheep husbandry. Mutton as a cheap and acceptable meat has of late grown greatly in popularity, and mutton now stands as one of the two important factors in the successful raising of sheep. In view of the fact that the Merino is essentially a wool-producing breed, with a fleece of the finest and best quality, it is evident that the pure-blood Merino, though it may supply our manufactories with the material for the finest of woollen goods, on the other hand it can not satisfy the butcher. The sheep having to both feed and clothe its keeper; it is an important question: What is the best breed of sheep to do this? Evidently not the pure-blood Merino. Though the growing of pure-blooded Merinos has its place, and an important one, and the demand for their wool indicates the prosperity of manufacture of the finest goods, it is in the crossing of them with other breeds in which the flesh-producing qualities predominate, that a sheep best for both meat and wool is produced. A cross-bred is the one that in most localities is to pay. The Merino is slow of growth and small of carcass when mature; but when crossed with a rapid grower, one that matures early, is a high feeder, and lays on flesh rapidly, but not remarkable for its wool either in quantity or quality, a sheep is obtained that pays for itself in its wool of prime quality, and furnish a good quantity of mutton as a profit. Of such character are the crosses of the Merino with the Cotswold and the South-down. But with the great mass of American sheep on the western plains, wool is the important product, and here the cross must be with the Merino upon the "Native"—a race of sheep which has grown out of a variety of early importations to this country—an intercrossing of various breeds in which many of the good points have been lost. In this field the Merino has a great work to do to raise the yield of wool 1, 2, or more pounds per head, and give it a higher value. The opportunity for the increase of our sheep interest is almost without limit, so far as favorable conditions of vast plains and healthful climate is concerned, and with our present large importations of woollen goods it is certain that no raw wool would lack for a market. There are many places where sheep may go and thrive that cattle and other life-stock dare not tread; and it should be the ambition of sheep-raisers to fill all these places with sheep adapted to these conditions, in the production of which the pure-blood Merino must find its full share of work. The revival in the sheep interest that is now in progress is both healthy and permanent. The surplus of wool and woollen goods is exhausted, and the growing crop is in demand. The shipping of whole car loads of Merino rams to the flocks of the great West, with calls for more than the East can supply, is not in the nature of a "boom," but founded upon the demands of the time and the merits of the breed.



A GROUP OF AMERICAN MERINO SHEEP.

The rapid growth in our sheep industries is shown by the figures given by George Geddes in an article in the New York "Tribune" for February 26:

"In 1836 our production of wool was 42,000,000 pounds; in 1860 it had increased to 60,000,000. In 1867, the annual production had risen to 147,000,000 pounds, and in 1877 to 208,000,000, that is from

1860 to 1877, inclusive, the increase was at the rate of 246 per cent, while in the preceding twenty-four years, the increase was about 40 per cent.

"Since 1809 our improvement in the sheep that produce clothing (fine) wool has been very great. Then 9½ per cent of unwashed wool to the live weight of the animal was the standard; in 1864 the best recorded yield was 21 per cent, and the heaviest fleece 27 pounds. Three rams bred since 1873 in Vermont have yielded fleeces averaging 27.3 per cent of unwashed wool, while the average weight of the fleeces of the rams was 34⅓ pounds.

"Wool yielded by cross-bred Merino and mutton sheep is held by the manufacturer to be of great value, producing a combing wool that gives softness and cloth-like character to our fabrics not found in those abroad, as admitted by the best London and Paris tailors. We are now raising good mutton and supplying a rapidly increasing market. In 1839, on the great market day before Christmas, 400 sheep fully stocked the market at Brighton, near Boston, Mass. Last year 272,000 sheep and lambs were slaughtered at the Brighton Abattoir, 20,000 of them coming from Kentucky.

"Capital employed by manufacturers is nearly $300,000,000 giving work to nearly 200,000 persons.

"The importation of wool in the form of manufactured goods is rapidly falling off. In 1860 our importation amounted to $37,973,190. In 1878, our population having increased not less than 12,000,000, we imported only $25,230,154. In certain classes this falling off of importations is very marked. In carpets the importation in 1878 was not one-fourteenth the value of the importations of 1872. Dress goods, in which the foreigners still lead our manufacturers in the estimation of certain wealthy consumers, are no longer imported as extensively as formerly, their value having fallen in 1878 to $12,000,000 from $20,000,000 in 1872.

"The wonderful progress made, to the great benefit of the whole Nation, is before us, and our flock owners having surmounted the difficulties of changing the flocks of the East into producers of long wool and mutton, and transferring the production of fine wool to the West and Southwest, we look forward to profitable production of wool, combined with mutton, in New-England, as has long been the case in Old England, and abundant rewards to the owners of flocks of fine-wooled sheep in their new homes. In view of the foregoing facts, may not the wool-growers and the wool-manufacturers justly claim that they have largely contributed to the balance of trade in our favor, and to the ability of the Nation to resume specie payment?" The above facts and figures are worthy of study.

Among the Farmers.—No. 51.

BY ONE OF THEM.

Sam Stone's Horse-Shoe.

There is one brawny wielder of the hammer and draw-knife who studies his trade and loves it, tempering horse-shoeing with humanity. I will tell about him by and by—but first, do all my readers know what a delicate and beautiful *box* a horse's hoof is? The *box*, figure 1, is in external form a segment of the base of a cone, tough and elastic. The sole of the foot is attached to it in such a way that it has a free up and down play with every step—bringing the frog down to a bearing upon the ground. This substance, which is called a *frog*, and indeed the sole and frog together, are not intended to sustain the whole weight of the horse, as is evident from the fact that every horse winces when forced to tread with his whole weight upon them, as when he steps upon or picks up a stone. Figure 2 shows a longitudinal cross-section of a horse's foot, and the relative position of the frog, sole, laminæ and shell. His weight is chiefly borne by the horny shell—and one who has not studied the horse's hoof will be surprised to find that the weight of the horse is really *suspended* from the inner walls of the hoof by delicate curtains, or leaves of horn, called the *laminæ*. They form the entire inner surface of the hoof walls, and are enclosed, each one by itself, in a vascular membrane, and so closely connected with the half moon-shaped bone, called the *os pedis*, which is the supporting bone of the columu of the leg, that at times the laminæ of one foot support almost the entire weight of the horse, for the weight is borne very slightly upon the sole in most cases. There are about 500 laminæ (so the books say,) in each foot, in all four feet, 2,000, of course, so that the weight which each one of these many thin laminæ has to bear is only a pound or so at the most.

I am led to this explanation of the mechanical construction of the horse's hoof, not on account of the beautiful adaptation of the structure to resist the jars and blows which it gets in daily use, but rather to enforce the great importance of sound hoof-walls, and to describe a shoe which I have had in constant use for some months.

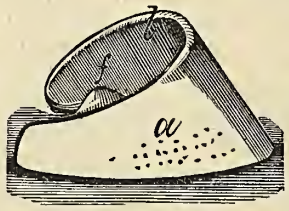


Fig. 1.—HORSE'S FOOT.

We all know that in icy weather horses must have sharp calks, and this is especially true in cities where the pavements are much more slippery in winter than in summer. Calks in horses' shoes are very soon worn down flat, or pounded smooth, so that the shoe has to be taken off, new calks put on, or the old ones sharpened, and the shoe nailed again upon the foot. The hoof-walls, which we have seen support nearly the whole weight of the body, are thus weakened or destroyed by the nail-holes, (fig.1, *a*), and the horse sometimes rendered useless until a new horn has grown out upon the foot. A more frequent result is that the shoes tear off or are "thrown" or "cast" off, and the animal is not unfrequently strained by slipping, or his hoof further injured before the horse can be re-shod.

The shoe I have been using avoids all this, in no new way in one particular—but quite new in another. There are calks provided which screw into the shoe, there being two toe-calks and one in each heel, making four to each shoe, fig. 3. This is an ancient device, and one which has worked very well for 100 years for anght that I know. These screw calks, of soft iron, wear down smooth in half a day's service, and then slip badly. Steel ones have been used, and these last longer, but do not hold so well upon pavements. The practice prevailed among some of changing one calk every day or two, so that the horse may always depend upon one to hold from slipping on each foot.

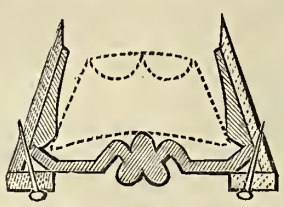


Fig. 2.—CROSS-SECTION OF HORSE'S FOOT.

Mr. Stone's improvement consists in making an iron calk with a small steel core, fig. 4. In use, the iron, being soft, wears away, and the steel maintains the point in good form a long time. When they wear they are of course replaced, one at a time preferably, though it makes little difference, as all remain sharp. My horse, which has worn this shoe, has been shod but once this winter, but his calks have been renewed several times. My attention was directed to these shoes by Mr. J. B. Olcott, the Agricultural Oracle of the "Connecticut Courant," who has used them for eight winters. He writes very enthusiastically about them, and I must say I do not think him at all extravagant.

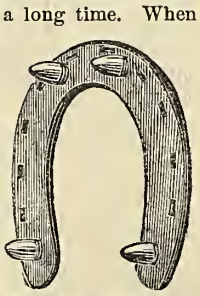


Fig. 3.—THE SHOE.

Right Angles.

In laying out a new line of fence, staking ont for a foundation, and in doing a thonsand and one things, we have to lay off right angles, or it would be better if we would, rather than to guess at them. Most of us remember the "asses' bridge" of the geometricians—that "the square of the hypotheneuse of a right-angle triangle is equal to the sum of the squares of the other two sides." If one has a ten-foot pole—or a tape line, or even no measure at all but a bit of pack thread, he can lay off his right angle with great accuracy. The numbers 3, 4, 5, give the sides of the triangle. See figure 5. *A*, *B*, is the base line. The point *C* is fixed. Measure off *three*

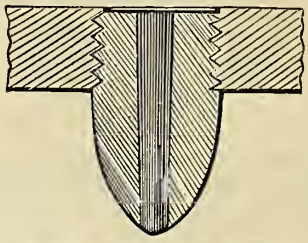


Fig. 4.—SECTION OF CALK.

anythings (feet, yards, five-foot or ten-foot lengths), and drive a stake at *D*, then measure off *four* lengths from *C* and *five* lengths from *D*, and thus determine the point *E*, which will be in a line at right angles to the line *A*, *B*, at *C*. This is absolutely a right angle, as may be proved practically

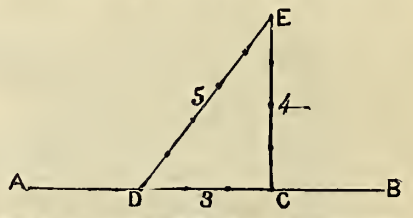
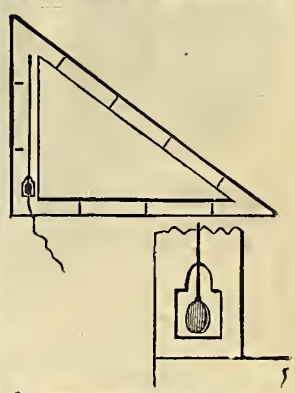


Fig. 5.—PLAN FOR GETTING A RIGHT ANGLE.

by putting another point on the line *A*, *B*, the other side of *C*, and finding that the distance to *E* will be the same as from the first *D* to *E*.—Three times three is nine; four times four is sixteen; nine and sixteen is twenty-five—which is also five times five. On the same principle one can nail three furring strips together for a big "square," to get levels or to secure perpendicularity in posts, stanchions or erections of any kind—or to mark out right angles upon the ground. One or both of the sides forming the right angle must be arranged for a plummet or "plnmb bob" as the workmen call it, as shown in figure 6.


6.—TRIANGLE FOR PLUMBING.

Cooling and Ventilation of Milk and Cream.

While it is quite true that the utmost care as to the food which cows eat, and in the matter of stables and milking does not suffice to remove entirely what is known as the "cowey odor," it is a fact that a great part of it may thus be avoided, and that proper rapid cooling and ventilation of milk while cooling is of the greatest service in improving the flavor, and securing longer keeping qualities in the milk, the cream and the butter. A ventilated can or pail cover for milk placed in pools or in springs for cooling was introduced somewhat last year. This consisted of a tolerably close fitting cover having a large tube, four or five inches high in the top. This tube is divided perpendicularly by a *septum* or partition making virtually two tubes. One of these is closed at the top, bnt has a large opening in the side to the outer air, which is covered with wire gauze. The opening of the other half of the tube at the top is covered also with gauze (see fig. 7). So long as the

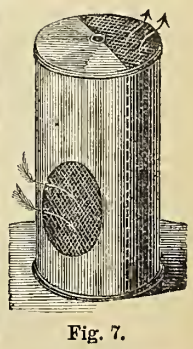


Fig. 7.

milk is warmer than the surrounding air, the air hlows in, circulates over the milk and passes off, following the direction indicated by the arrows.

This top is useful for milk set in pools or springs to cool, or for milk set for cream to rise. The milk being perfectly protected from insects, animals and dust, or foreign matter of any kind, while a free circulation of air is passing over its cooling surface so long as the milk is warm at all.

A Milk Stirrer.

Mr. J. C. Long, of Orange, added for his own use an improvement to this useful invention, rendering it a perfect and rapid means of cooling milk.

This is a *Stirrer*, which is simply a disc of tin from which a long stiff wire rises and passes through the ventilator in a small tuhe made for the purpose. By means of this wire the tin disc, which is 4 to 6 inches in diameter, is moved up and down through about three inches space in the hottom of the can or cooler—the down strokes being quick and strong. Three strokes are sufficient to change all the milk in the can, causing that at the bottom, and coldest, to he stirred through all the rest.

If more milk is to be added the top is slid off half way and is held by the stirrer-wire. Figure 8 shows a 40-quart can of the modern kind, supposed to be standing iu a spring or tuh of ice water.

A Cream Can.

Cream, as taken from the pans, coolers, or other milk-setting vessels, always contains a notable

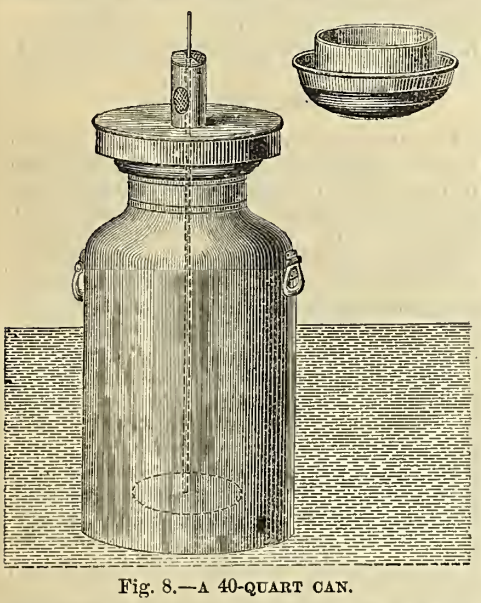


Fig. 8.—A 40-QUART CAN.

quantity of milk which separates from it in the course of a few hours. If cream is sold as such, it should be solid cream, of course. Thcre are two ways for getting solid cream—dippiug it out of the cream jars or cans, or drawing the milk from under it. The latter mode is preferable.

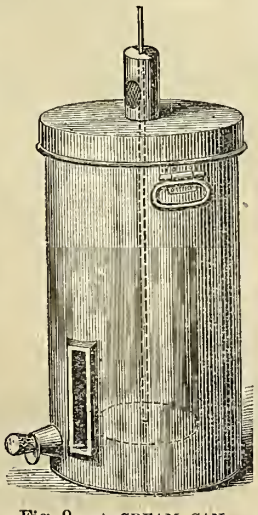


Fig. 9.—A CREAM CAN.

I have in use a cream can which holds six or seven gallons (see fig. 9). It is provided with the ventilating cover and stirrer just described, and has a window at the bottom to show how much milk separates. At the bottom there is also a spout, closed by a cork. Whenever cream is added, the whole mass, new cream, old cream, and milk, are stirred together, hy a few dashes of the stirrer. This cream holder may be kept cool by being placed in water, or hy having lumps of ice laid upon the top, and thus the cream freed from milk is ventilated and kept sweet at the same time. When cream is to be ripened for churning, it should be kept at a temperature of 60 to 63 degrees until it turns slightly sour. This cream-holder, when used for this purpose, may be set in lukewarm water, in a warm room, or upon hot water or steam pipes, where such means of heating are used. Where either of these can be had and controlled, it would he very convenient to have warmers made for the purpose, to be placed under the cans (see fig. 10). This warmer being connected hy a ruhber tube to the hot water tank, or pipe, would be kept at any desirahle temperature by allowing more or less water to flow through it.

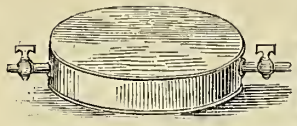


Fig. 10.—CREAM WARMER.

The best way of ascertaining the temperature of milk or cream, is by means of a floating thermometer. One advantage which the Stirrer described offers, is that the milk may he thoroughly stirred while the thermometer floats in it without its receiving any injury; further the test is morc accurate.

Gilt-Edged Butter.

There is no doubt that much of the present improvement in the quality of butter is due to recent methods of setting milk, churning the cream, and preparing the hutter for packing; and these are a natural outgrowth of the factory or creamery system of dairying. It is a notahle fact that the highest-priced hutter on the general markets is that from creameries, in which every new and improved device for aiding in butter making is tested and used if found worthy. The dairy system gave way to that of the creamery, because no single dairy could afford to procure the needed machinery and skill for producing the finest butter. But now a small dairy can find it profitable to use the most modern appliances because these are adapted for all uses, and to furnish the dairy of one cow or thc factory of 1000. For setting the milk there are the deep-can and the shallow-pan creameries, and it is an undecided questiou among dairymen which of these two systems is the better. Premium butter has been made on each system, and the question is really nothing more than one of convenience and inclination, not to say prejudice. The Cooley System of dcep setting, with submerged cans, is an excellent one for those who prefer the deep cans. A new and shallow-pan creamery, which cannot fail to please neat and amhitious dairymen is the Ferguson Burcau Creamery. This is so arranged as to provide every facility for cooling the milk in the summer or warming it in the winter, for preserving the milk free from dust, and for aërating and exposing it to the light. It is provided with glazed doors, and with ventilating openings which are protected by gauze covers, and is not only very convenient for its purposes, hut a neat, if not handsome, piece of furniture for the house, dairy, or butter factory. The pans are square, of different sizes, and about 6 inches deep. An arrangement is made for drawing off the milk from thc hottom of each pan. But it is upon the churning that the character of the butter chiefly depends. Of the great variety of churns there are hut few which give general satisfaction, and still fewer with which butter can he completely made and prepared for packing in the churn. In figure 1 we give an engraving of hutter madc by the new method of churning without dashers. It will be noticed that this consists of small grains of the size of sago grains, loosely aggregated together. The butter from which this drawing was made was churned in the Rectangular churn (shown in figure 2.) As this is revolved by two opposite angles, a very complete agitation of the cream is secured, and 8 to 12 minutes is sufficient to bring the hutter, in the condition shown in the engraving. The butter lies so loosely in the churn that the huttermilk can he drawn off from an opening at one of the angles, and cold water being poured in; by revolving the churn a few times, the butter is thoroughly washed, and freed from the buttermilk. A method of washing butter with cold brine, we believe, when in this condition, has heen patcuted; of the justice of the claim to a patent on this so-called

Fig. 1.—FINE GRANULAR BUTTER.

improvement we have nothing now to say, excepting that the method is by no means new; hut to avoid interference with a patent, just or unjust, another plan may he pursued. After the butter has been washed, salt may be sprinkled over it, and a few more turns of the churn thoroughly mixes it. A rest of a few hours for the hutter to drain may be given, and it is then ready for packing, more salt being added if necessary. Some experience with this churn in the writer's dairy has heen very satisfactory, and its simplicity is sueh that any person, not an expert, can hardly fail to make the best quality of hutter in it, after the first attempt. The advantage of using the best dairy appliances is obvious. Price depends upon quality, and quality depends upon the usc of the most effective implements. There is no reason why all dairy butter should not he equal to the hest product of the creamery, all that is needed, good cows heing secured, is to use thc same means and methods of manufacture, and the best dairy appliances may he

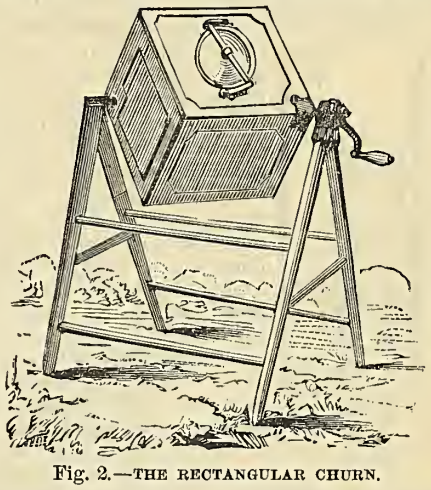


Fig. 2.—THE RECTANGULAR CHURN.

procured at such a reasonhle expense, that the extra value of the hutter from a small dairy of only five cows will pay for an outfit of a creamery, and a churn of the hest kind in a single season.

A Jersey Cow's Record.—It is not rare to find a heavy milker among Jersey cows, yet the average is hy no means extraordinary. Possihly a true record of a whole herd of Jerseys as to weight of milk would fall below that of a herd of natives even, and greatly below that of an Ayrshire herd. A notahle record of an English Jersey cow, however, is worth recording. The cow is "Luna," owned hy Mr. Simpson. In 1876 she gave 8,985 lbs; in 1877, 8,202 lbs.; in 1878, 8,368 lbs.; an average of 8,518 lbs. per year, or equal to a daily average of more than 23 lhs. or 11 quarts. One of the most conspicuous characteristics of a Jersey cow, is her persistence in milking, and although she may not give so great a yield, yet by hanging on during 300, or 330 days, she makes up hy perseverance, what others do by more copious, hut less continuous milking. If there were only more Jerseys like this one!

Fence-Post Driver.

A fence-post driver on the plan of a pile-driver is shown in figure 1. This is made to fit upon a wagon body, resting on the sill *a*, and being held down by the bolt *b*, which is provided with a thumb screw. The upright post, *c*, one-half only of which is shown, so that the peculiar arrangement can be seen,

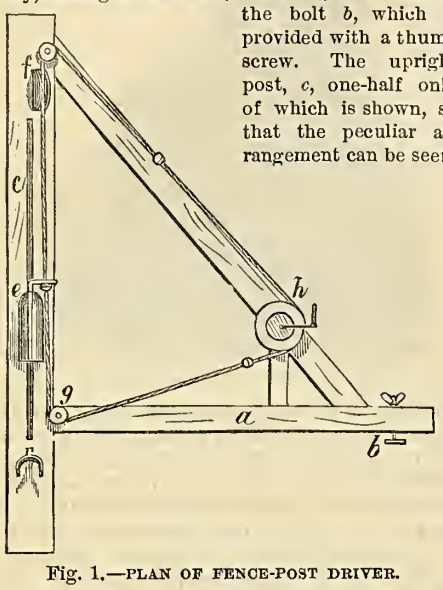


Fig. 1.—PLAN OF FENCE-POST DRIVER.

is 15 feet long, and 12 feet above the sill, 3 feet being below it. On the lower part a pair of guides are provided which clasp the post loosely, and cause it to be driven in the right direction. The driver (*e*) is of the usual kind, provided with flanges which run in grooves in the upright posts that serve as guides. The driver is lifted by a forked catch, through which the hoisting rope passes, and a round button fastened on the rope at proper intervals, engages in the catch and so raises the driver. When the driver is lifted to the top of the post, the button strikes a cam (*f*), which is made with a groove through it to admit a rope, and the button, not being able to pass through the groove, is drawn by the edge of the cam out of the forked catch, so as to liberate it and let the driver fall on to the head of the post. The rope is an endless one, passes over rollers (*g*); and having one turn around the winch (*h*). As the winch is turned the rope is drawn under and over the rollers, the button passing over these, and as the driver falls, a button is ready to take it up again. So that the action is continuously forward, and no rope has to be lowered to pick up the driver. This saves much time and an extra hand, one man alone being able to do all the work if necessary. The posts are held by the guides as shown in figure 2. The head of the post is not driven any lower than a few inches above the guide. The driver should be of cast iron, and, to be most efficient, weigh not less than 50 pounds.

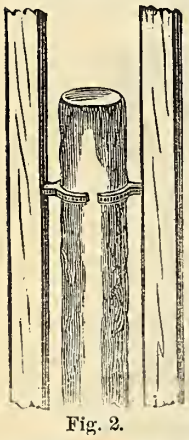


Fig. 2.

Tape Worms in Lambs.—Tape worms frequently infest sheep and lambs, but injure only the lambs, as these are not robust enough to resist the irritation caused in the bowels. When the lambs are troubled with diarrhœa, and scales, and flat ribbon like fragments are found in the dung, tape worms are present. Then 2 ounces of Pumpkin-seed, mashed, or pounded to a paste; or the same quantity of powdered root of Male Fern; or 2 ounces of Raw Linseed Oil, with half an ounce of Spirits of Turpentine, may be given, and repeated at the end of six days. Two ounces of the oil should be given six hours after the administration of the Pumpkin-seed, or Fern-root. Sometimes a large quantity of segments of the worm may stop the bowels, and cause constipation instead of diarrhœa. In this case, the belly will be found tense, and filled as with wind or gas, and in each case an injection of the oil may be given, followed immediately with another of blood-warm water.

Hints and Helps For Farmers.

A CORN MARKER.—An Indiana farmer sends sketches of a very useful corn marker, which is adapted for uneven, as well as for smooth ground. The implement is shown in figure 1. There are 4 markers connected by cross-bars, and strengthened with braces. The cross-bars are 2 by 3 inches, fitted in notches in the runners, and are hinged so that the runners will adapt themselves to uneven ground, as shown in figure 2. The runner shown in figure 3, is 3 feet long, and 14 inches wide. The hinges are made of rods and eye-bolts, such as are used for harrows. When moving to or from a field, the outer runners may be turned up, as shown in figure 4.

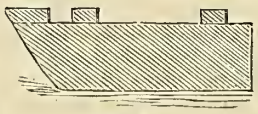


Fig. 3.

TO SLING A BARREL.—It is often desirable to hoist a barrel to a loft or elsewhere. In this case one should know how to sling it. This may be done as shown in the illustration. A rope is passed around the barrel, and a half-twist is made in it. The end is then carried under the bottom, and brought up on the other side, where it is passed around and brought back, and a half hitch taken on the side opposite to the first one. The ends of the rope are then tied, figure 7, thus making a sling by means of which the barrel is easily hoisted.

Fig. 5.—A SAFETY KNOT.

SAFETY KNOT.—Mr. L. Osius, Washtenaw Co., Mich., sends sketches of a Safety Knot, of which we give engravings. Figure 5 shows how the knot is made; *A*, the end of the rope, and *B*, the continuing part. The knot is useful and handy for many purposes, as binding loads of hay, etc.; in fact, for all work when a rope with a safe knot is needed.

Fig. 6.—SINGLE BOWLINE KNOT.

ANOTHER KNOT.—Our old friend, Jas. B. Olcott, in sending a holiday greeting, after his usual manner of combining the "useful with the agreeable," sends a note about a knot, illustrating it by the knot itself. Though we illustrated this knot some years ago, we give it again on a larger scale, as it allows us to show an important improvement in the use of wire for whipping the rope. He writes: "I have been thinking of sending you a Single Bowline this long time. It is one of the most useful knots on the farm. I think it indispensable for tethering calves and cattle, because it will never untie when once properly drawn in place, and no matter how tight, or stiff, or wet it gets in use, it may be untied with ease and in a moment. This is the knot we see sailors using when they throw a line to the wharf with a hawser, knotted at the end, to make a vessel fast by. It makes no odds how taut she hauls the cable, the big knot that holds her will loosen with a turn of the wrist. The wire-whipping at the ends of the bit of cord speaks for itself. That whipping will outwear any rope. I bend the wire around the end of a rope by successive bites or pinches in an iron vise, coaxing the ends of the wire into place, now and then, with a light hammer." This is much better than using thread.

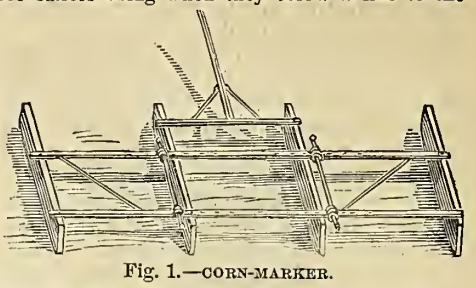


Fig. 1.—CORN-MARKER.

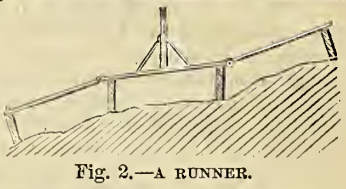


Fig. 2.—A RUNNER.

Fig. 4.

Fig. 7.

A Barn for Sheep.

Several ask for a plan of a sheep barn, in which cut feed can be used. As a rule, sheep do better on long feed than on that which is cut, or prepared in any way. They masticate their food thoroughly, and in so doing, it is well mixed with saliva, which acts as a solvent of the food, and without which digestion is not perfect. Cut or cooked food is more easily swallowed than long hay, coarse straw, or unground grain, and sheep do not thrive so well upon it. There is some economy in using cut food, and this may in some cases perhaps make up for defects in other ways. But the arrangement of the barn does not depend entirely on the system of feeding; the interior arrangements may be so made, as to be applicable to any method of feeding, and a building of this kind is here described. The ratio of available space in a building, as compared with the length of the wall, depends upon the form; a square building, with 96 feet of wall, will be 24 feet in diameter, and contain 576 square feet in area. A circular building with 96 feet of wall, will be 30½ feet in diameter, and have an area of 732 square feet; an octagonal building with 96 feet of wall, will have a diameter of 29 feet, and an area of 696 feet, and a building of this shape, will be built much more conveniently and cheaply, than a round building. For sheep, the octagonal form is especially well adapted, because the largest space is needed, and no fastenings or stalls are required. The inner arrangement for feeding, too, may be

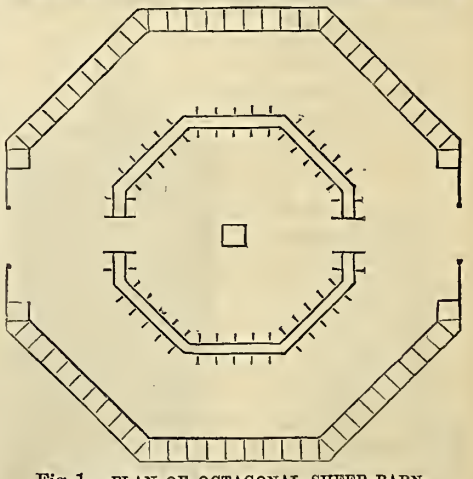


Fig. 1.—PLAN OF OCTAGONAL SHEEP BARN.

made with the greatest convenience in a barn of this kind. At figure 1 is given a plan of an octagon sheep barn, supposed to be 36 feet in diameter, and intended for a flock of 150, to 200 sheep. A range of feed racks, made as shown at figure 2, runs

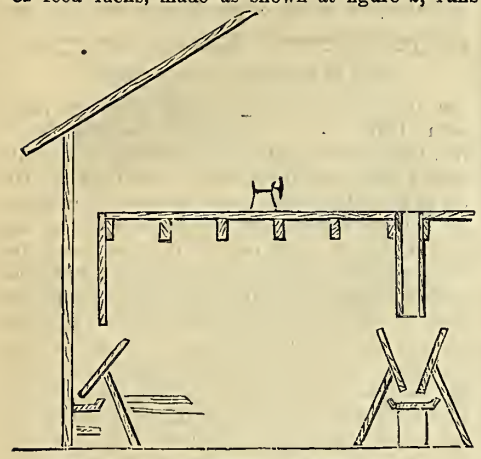


Fig. 2.—ARRANGEMENT OF FEED RACKS.

around the barn, and another 9 feet from it; the latter is double, and is fed from both sides. Feed spouts are dropped from the floor above at convenient intervals, to carry the cut chaff into the feeding troughs. The most economical power for cutting the feed, would be a wind-mill, placed over the center of the barn, and a well might be dug in the center of the building, from which water could be forced into troughs in a yard made around it. The feed trough is made as shown at figure 3, consisting of a box for the feed with a sloping board in

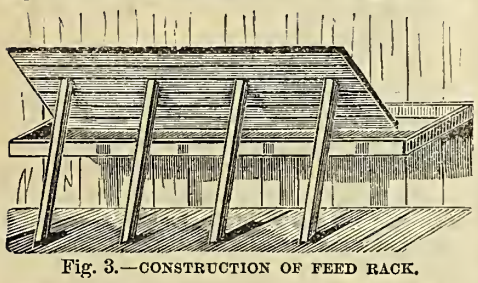


Fig. 3.—CONSTRUCTION OF FEED RACK.

front, coming down to within 4 inches of the bottom, to prevent the sheep from wasting the fodder. Sloping stakes should be fixed about 2 or 3 feet apart in front of the troughs, to prevent the sheep from crowding each other away from their feed. A push rake, (fig. 4), would be found useful for putting the chaff into the spouts. It would not be advisable to wet the feed for the sheep, the labor would not be repaid by any advantage that might be gained. Any grain which may be given to the sheep, might be fed in the troughs once each day

The Sewage Waste of the Family.

We are making some progress, both on the farm and in the village, in utilizing the contents of the sink-drain, and the water-closet, or the earth-closet. But still there is great room for improvement. We consume in our families abundance of animal food, furnishing all the materials out of which plants are made. These fertilizing matters are nearly all wasted, unless there is some contrivance to incorporate them with the soil. If properly saved, the wastes of the family would fertilize the half-acre garden adjoining the dwelling, and make it produce

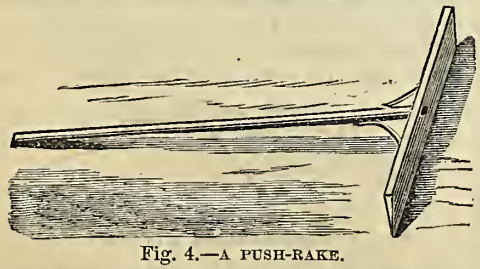


Fig. 4.—A PUSH-RAKE.

maximum crops of fruits and vegetables for the supply of the table. We have tried the two most common methods, that of composting fecal matters, and that of turning them into a cistern for the manufacture of liquid manure. While both are good, and each has its advantage, we prefer the application of these wastes in the form of liquid manure. There is not much choice in either case as to the labor to be expended in conveying fertilizers to the soil. The use of the liquid manure involves a little more expense in the fixtures. For this purpose a cistern is needed of sufficient capacity to hold all the water used in the family for six or eight weeks. The privy vault enlarged and cemented will answer a good purpose. A large earthern or iron pipe four or more inches in diameter, should conduct the sink and laundry water into this cistern. This liquid manure can be used to advantage at all seasons of the year. For the seven months or more it is available for direct application to growing vegetables and fruits in the garden, and for the winter season it can be pumped on to the compost heap where all the vegetable wastes of the garden, and leaves, and muck, are fermenting for next season's use. This liquid not only furnishes plant food, but supplements the rain-fall which is oftentimes quite deficient for maximum crops. So great is the satisfaction of seeing luxuriant vegetation in the garden, and of eating well-grown fruit and vegetables, that we should use liquid manure even if it was more expensive. CONNECTICUT.

Stable Windows.

Many horses are made partly or completely blind by want of windows in the stable, or by windows improperly placed, or not correctly made. If the light comes from one side only, the eye furthest from the light receives less of the sun's rays; if it comes from behind, it is almost as injurious to the sight; if there is no light, the sudden transition from darkness to bright sunshine, more especially in the winter when snow is on the ground, is painful and injurious. A direct face-light is preferable, but a diffused light is better than any other. It is rarely possible to have windows on every side of a stable, and therefore one must choose the best. This is the side in front of the stalls, so that the horse faces it, and the light should come from above. A window made to slide (figure 1), is perhaps the best for a stable, as it is cheap, simple, and may be opened a short or longer space for ventilation. A shade to deflect the light may be fitted below the window, for use in bright weather, as shown at figure 2. This shade is hinged below the window, and may be made to rest on brackets, and form a shelf if desired, or may fall down against the wall. It may be raised by a cord or a short brace from the wall. It should be painted white, so as to reflect and diffuse the light as much as possible. An excellent kind of window is a swinging sash (fig. 3), which, being made to swing out at the top, and in at the bottom, provides at the same time a good means of ventilation. The air will escape at the top, and pass in at the bottom as shown by the arrows. Stable windows, upon which direct sun-light falls, should be shaded by spatter-work, done by spraying lime-wash on the glass, from a paint brush over a round stick. This covers the glass, and while it is translucent, it is not transparent, and softens and diffuses the light.

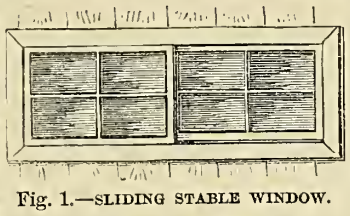


Fig. 1.—SLIDING STABLE WINDOW.

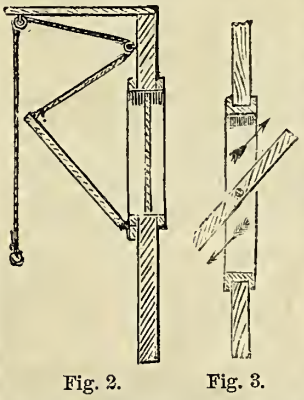
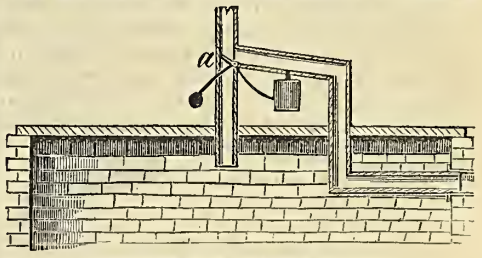


Fig. 2. Fig. 3.

Pure Cistern Water.

There is frequently much difficulty arising from impure cistern water. Constant complaints are made of it, and inquiries often come to us to know how to purify the water or cleanse the cistern. The difficulty arises from the admission of impurities into the cistern, not that there is anything wrong with the cisterns or with the method of keeping



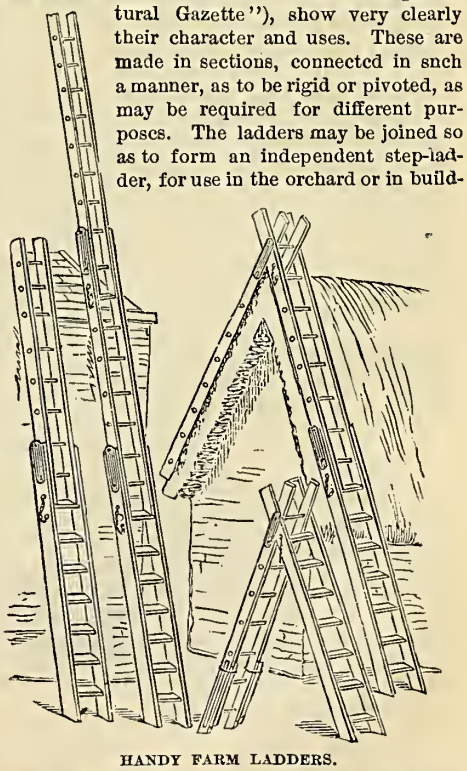
PURIFIER FOR CISTERN WATER.

the water. The impurities are carried in with the first water of a shower that falls, washing the roof of all the various accummulations that gather upon it and in the gutters during the dry weather between the rains. Numerous insects and leaves, a large quantity of dust and various organic matters, such as the droppings of birds, pollen of trees, spores of fungi, etc., are thus carried into the cistern, where they decompose, ferment, and foul the water. This is not nearly so easy to cure as to avoid. It may be prevented by some arrangement by which the first water is turned from the cistern into the overflow, with the gathered impurities.

Such an arrangement is shown in the accompanying illustration. The leader from the roof is connected with a pipe into the outlet, as shown, and a valve is made to shut off the water from the cistern (at *a*). The valve is connected with a lever, weighted at one end to keep it closed, and at the other end is a receptacle for water which runs in a small stream from the offset of the leader pipe. When the rain falls, the water flows off into the outlet, a small portion falling into the receptacle. When this is full it overbalances the weight, and drops, when the valve is moved, so as to close the waste-pipe and turn the water into the cistern.

Farm Ladders.

The accompanying engravings of farm ladders, (for which we are indebted to the "London Agricultural Gazette"), show very clearly their character and uses. These are made in sections, connected in such a manner, as to be rigid or pivoted, as may be required for different purposes. The ladders may be joined so as to form an independent step-ladder, for use in the orchard or in build-



HANDY FARM LADDERS.

ings, or as a long ladder, that may be turned over the peak of a roof for thatching or shingling. By using a third section placed upon a stack, it may be used for building up, or for finishing off the top.

Saws and How to Use Them.

The idea of a saw was probably first suggested to mankind by a jagged edged knife. Some insects are provided with very perfect saws, such as, for instance, the well known seventeen-year locusts, the saw flies, and the wood wasps. Insects were, in fact, the first sawyers, and sawed for their existence ages before a human being thought of a saw. A Grecian story relates that an uncle, Dædalus, and his nephew, Talus, invented the saw almost simultaneously by first discovering that the jaw bone of a snake could be used for cutting wood, and improved upon the idea by notching an iron plate. As in modern times, each one of these

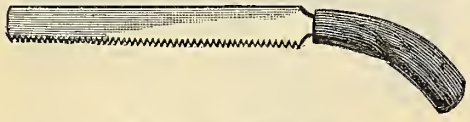


Fig. 1.—A THEBAN SAW.

inventors claimed priority, and there being no patent office to appeal to, the uncle decided the dispute in the old fashion way by killing his nephew, which was a summary and effective manner of settling what a patent lawyer would now call an "interference." Ovid, who is known for his

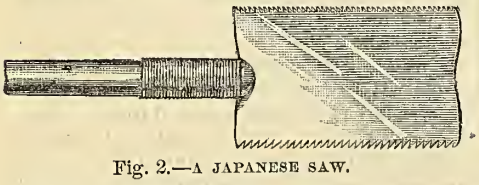


Fig. 2.—A JAPANESE SAW.

doubtful way of giving facts, states that one Perdix, another nephew of Dædalus, made the discovery by using the back-bone of a fish, and was changed to a Partridge by some jealous rival; it is not stated whether his rival plucked him clean, as is done

Fig. 3.—A KEY-HOLE SAW.

now sometimes. Then, as now, we see that the inventive faculty seemed to run in families. Saws were made in what is known as the stone age, when

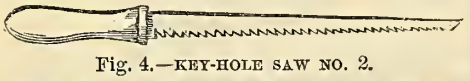


Fig. 4.—KEY-HOLE SAW NO. 2.

only stone tools were in use, by cementing sharp flakes of flint into wooden handles. Saws of a very hard and glassy volcanic stone, known as Obsidian, have been found in New Jersey under several feet of gravel. Saws of the bronze age have been found in Germany. After bronze, iron came into use, and saws (very much like ours of the present day) were employed by the Egyptians. A saw found in the ruins of Thebes, and now in the British Museum, is represented at figure 1, and some old writers of nearly 2,000 years ago are supposed to have known of circular saws. The saw in figure 1 is fastened into the handle by means of a tang, as our knife blades are. Saws are frequently mentioned in Scripture, and stone, even, was cut with saws for Solomon's temple. The fact is, that every form of modern saw which is supposed to be of the very latest invention, has been known for many ages; circular saws were in use in 1777, and even the supposed to be recent band saw was patented in England in 1808. Besides, some very old saws are much better, and made on more correct principles than our modern ones. For instance, who has not been annoyed when using a key-hole saw to find the blade catch and bend nearly double, and sometimes snap off as it is pushed through the wood. But the Japanese and Chinese, and other Asiatics, have used saws of this kind for centuries that are free from this objection. At figure 2 is shown a Japanese saw that was used by a Japanese

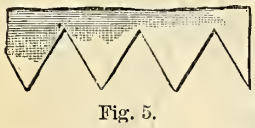


Fig. 5.

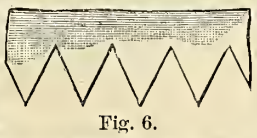


Fig. 6.

mechanic at the Centennial Exhibition. The teeth are seen to be inclined in a direction contrary to our usual method, and a key-hole saw thus made (fig. 3) could not possibly bend or break while in use, as that shown at figure 4 would certainly do in the hands of one that was not an expert in the use of saws. With this exception, our saws are now more effective than saws ever were, because the principle upon which the teeth work is well understood. The teeth are used first to cut, then to open an easy channel in which to work, and lastly, to remove the chips or saw-dust. The form of the teeth and the "set," or bend given to them, enable them to perform these operations properly. The best form, of course, has been discovered by gradual experience. If a novice attempts to cut a board across the grain with a rip-saw, he will find out that the shape of the teeth has much to do with the work, and that for cross-cutting and cutting along the board in the direction of the fibres, differently shaped teeth are required. A cross-cut saw cuts across the fibres of the wood, and sharp-edged teeth, filed to sharp points, so as to tear the fibres apart, are required. These teeth are triangular, and are most frequently cut at an angle of 60 degrees (fig. 5), and sometimes at an angle of 50 degrees (fig. 6). For greater ease in sharpening, the form of the tooth has been changed in mill saws, as shown at figure 7, and this, by degrees, was improved to the "briar-tooth," figure 8, which is well adapted for the scraping or paring action used in rip-sawing timber. In ripping, a sharp chisel-like cut is made along the fibres, and the piece pared off is wedged out of its place by the teeth, the fibres having little adherence together as they lay side by side. This may be readily seen by the ease with which a board may be split lengthwise. This action is facilitated by the set of the teeth (fig. 9), each alternate tooth being bent outwards, so that the cut is wider than the blade of the saw. Formerly the teeth were bent over in sets of several at one side (fig. 9) alternately, but now each alternate tooth is set. Some sawyers upset or swage the teeth (fig. 10), which has the same effect as setting, but is better, because each tooth has two cutting corners. The teeth of a

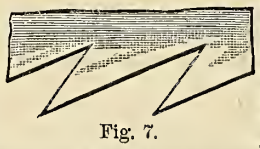


Fig. 7.

Fig. 8.

Fig. 9.—TEETH SETTING.

Fig. 10.—SWAGED TEETH.

cross-cut saw divide the fibres across, and reduce them to dust, the edges being sharp, to produce a clean cut (fig. 11). This is the M form of tooth,

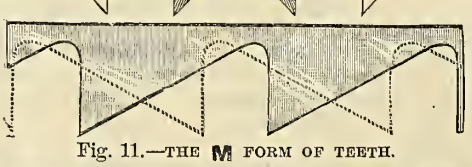


Fig. 11.—THE M FORM OF TEETH.

which was first described in 1846 in Germany, and it is, in fact, a doubled ordinary saw tooth, cutting both ways, and is therefore very rapid in its action. The teeth are usually set by bending the whole doubled tooth (fig. 12), but sometimes each half-tooth is bent alternately. This form of saw cuts in a remarkably easy manner. Perhaps the most useful innovation in sawing, is the use of the band saw, in which no back stroke is made, but a continuous down-stroke of a thin saw-plate, which runs over two large pulleys. This is an improvement on the circular saw, which has also a continuous motion, as the band is always tight and rigid, and does not spring as a circular saw sometimes will (into a dish form,) by the heating and expansion of the outer portion of the disc.

As saws are wasted by filing, the space between the teeth is removed by "gumming," which is cutting away the metal, or punching it out. To ren-

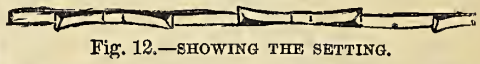


Fig. 12.—SHOWING THE SETTING.

der this operation easier, some saws are made with holes in the lines of the "gullets" (fig. 13); rounded gullets are stronger than acute angled ones, and do not crack as easily as the latter do (fig. 14), and the holed saws are convenient, not only on this account, but because a crack that may start, will not go beyond the first hole. For the purpose of clearing the saw-dust, a few teeth are sometimes left without set, and filed shorter than the others, but this is not necessary if ample room is left in the gullet to carry out the sawdust. American saws were formerly considered inferior to the English, but by care and skill in the manufacture, they are now superior to the English, and are largely exported to England. An American mechanic now insists upon having an American saw.

Shell Marl, Oyster Lime, and Swamp Muck.

The recent numbers of the Weekly Bulletin of the Connecticut Agricultural Experiment Station, under the able directorship of Professor S. W.

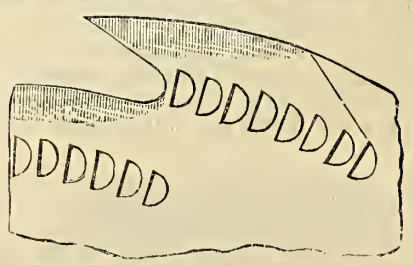


Fig. 13.—HOLES IN THE "GULLETS."

Johnson, have contained information of value to the general farmer. In the number for February 7th is an analysis of a Shell Marl which is shown to consist of 40 per cent of Carbonate of Lime and about 2 per cent of Carbonate of Magnesia, the remaining being mostly sand and moisture.

"There can be no doubt that its employment, in liberal quantities, viz: one or more tons per acre, especially upon grass lands, would often be attended with decided and long-continued benefit, but, in most cases, its action upon grain crops would not appear at once in so decided a manner as is very commonly the case with good superphosphates or guanos.

"The fertilizing effects of this Shell Marl, as well as its commercial value, may be safely measured by the percentage of lime which it contains."

It is proposed to put this marl on the market as a fertilizer at $15 per ton, a price that is far more than the material is worth.

The analyses of Oyster-Shell Lime, of which three are given in the same Bulletin, show that the principal constituents are Carbonate of Lime and Hydrate of Lime, with small quantities of Potash, Soda, Magnesia, and Phosphoric Acid.

"When applied to land, oyster-shell lime may act as *fertilizer* strictly speaking, or as an *amendment*. Commonly, both kinds of action are exerted, and the distinction between fertilizer and amendment is not generally recognized in practice, although very important in considering the effects of this substance. Lime is used as an amendment on heavy clay soils, 2 to 3 or more tons being sometimes applied per acre. On loams or light lands

Fig. 14.—SHOWING A CRACK.

1,000 pounds, or 20 bushels of Oyster-Shell Lime, applied once in two or three years, is a usual application, equivalent to the addition of 300 to

500 pounds to the acre, annually. It is evident that the small quantities of potash, magnesia, and phosphoric acid contained in such doses of oyster-shell lime can have no sensible effect upon crops.

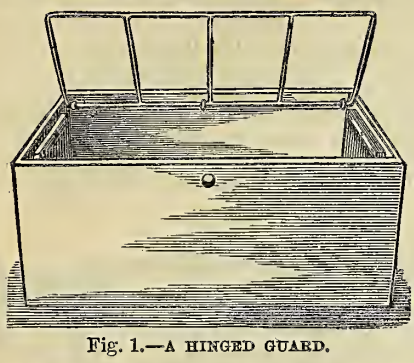


Fig. 1.—A HINGED GUARD.

It is the lime alone, therefore, to which any benefit must be ascribed. A consideration of the modes of action of hydrate of lime, when applied as a fertilizer, will make evident that it is one of the most valuable aids to the farmer and deserves more attention from land owners than it has received.

"Our cultivated crops contain on the average as much lime as potash. The necessity for the application of potash salts is fully recognized, but probably the lack of lime is as common a cause of unfruitfulness; for while potash seldom wastes from the soil to any serious extent, and is found in

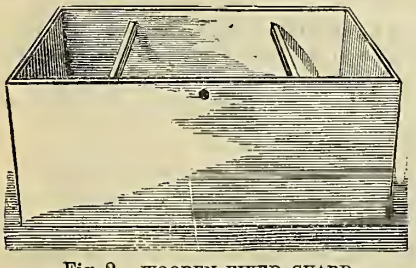


Fig. 2.—WOODEN FIXED GUARD.

spring, well, and river waters, in extremely small quantities, lime freely dissolves in water and rapidly wastes from the soil, so that other things being equal, there is more need for its restoration."

The three samples of Peat or Swamp Muck, the analyses of which are given in a later Bulletin, contain 2 to 3 per cent of Nitrogen, which, when the muck is acted upon by an alkali, like lime, becomes available plant food.

"There can be no doubt that the application of this swamp muck, especially to poor, light soils, would be very serviceable. Evidently, however, the large proportion of water which the fresh muck contains makes it a nice point to decide how much can be spent upon its handling without consuming the profit of its application. The proper mode of using swamp muck is to throw it out where it will drain and dry for some months, during frosty weather, and to employ the weathered muck as an absorbent in the stables or barn yard, or to com-

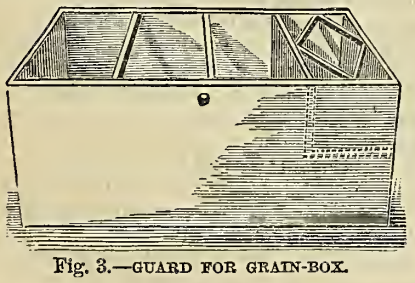


Fig. 3.—GUARD FOR GRAIN-BOX.

post it with lime, fish, or any other animal matters yielding ammonia by their decomposition."

Guards for Feed Troughs.

To prevent the feed or hay from being thrown out of the mangers or feed-boxes, a practice which some horses indulge in very freely; it is customary to use guards, which may be either hinged so as to be raised up as shown at figure 1, or fixed across the manger as at figure 2. The guard, like figure 1, may be made of strong wire, or light bar-iron, riveted together, or it may be merely a wooden frame. The guards shown in figure 2 are simply wooden cross-bars, so fixed by means of nails, that the horse or cow cannot throw out the feed with its nose. For feed-boxes the guard may be made by nailing pieces across the corners, as shown at figure 3, if the box is not large enough to allow them to be nailed lengthwise. Some such device as shown in the engravings, should be provided, whenever there is a disposition on the part of the animal to waste its feed. A few minutes in making a guard of some kind, will save many times its cost in the course of a few weeks.

Poultry Farming.

There is no other branch of stock keeping that seems to be so popular or promise so favorably as poultry raising. The general idea is that the business consists of throwing out corn to a flock of hens with one hand and gathering eggs with the other. But while this may be true in some cases, it is very different in others. It is very interesting for a novice to watch an expert performing some intricate operation with the greatest ease and coolness and with perfect success, and he may think it is a very simple matter. It is the same in regard to poultry keeping; the expert poultry fancier meets with no difficulty and all goes on smoothly, but the novice is in trouble from the first; the eggs are few, the chicks die, vermin and disease destroy the flock, and the attempt ends in disaster. Probably the reason is, that too much has been attempted and failure has resulted as much from this as from want of attention. One may very easily keep 10 or 12 fowls with profit, who could not easily double or treble this number successfully, because with a large number, all the difficulties which arise, such as want of cleanliness, the pres-

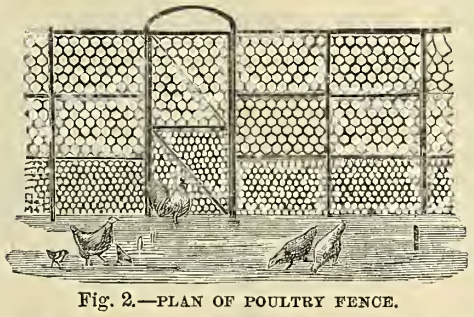


Fig. 2.—PLAN OF POULTRY FENCE.

ence of vermin, impure air and risk of infection increase in a much larger ratio than does the number in the flock. But if one has succeeded with a small flock there is no reason why he should not be able to do so with several flocks, if each is kept in just the same manner as the original one. Afterwards the flocks may be enlarged, but as this is the very point on which most of the younger poultry fanciers fail, the greatest caution should be observed in adding to the number of fowls kept in each coop or house and yard. An inquiry is made by one who is desirous of keeping fowls upon a farm of thirty acres which has a stream passing through the middle of it, as shown in the plan in fig. 1, which is given as a good method of dividing it and arranging the yards and houses. From considerable experience with a similar plot of ground, we would suggest that the thirty acres be laid out in lots of two acres each as shown. The dwelling and orchard lots in the center would contain two acres, and each of the acre lots on either side of the stream would have a yard or "run" fenced off and kept in grass for grazing. The houses would be ranged, each in its yard, on both sides of the stream, as shown, and a plentiful supply of water would be always at hand. A yard is behind each house; the yards behind the dwelling may be used for brood coops in which the young chicks

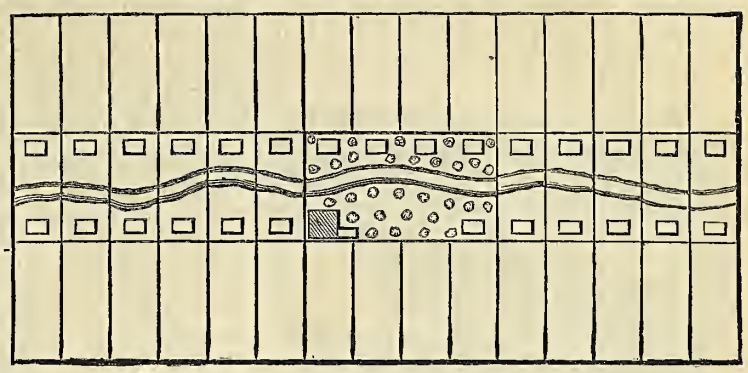


Fig. 1.—PLAN OF POULTRY FARM OF THIRTY ACRES.

would be near at hand. The fences between the yards may be of pickets or wire; the latter would be preferable if it could be afforded. A very complete arrangement of wire fence is shown in figure 2, and one for a small coop and covered yard in figure 3; a range of houses of very convenient shape and size, which may be left open or enclosed with yards, is shown in figure 4. It would be proper to keep each lot securely fenced, so that the flocks

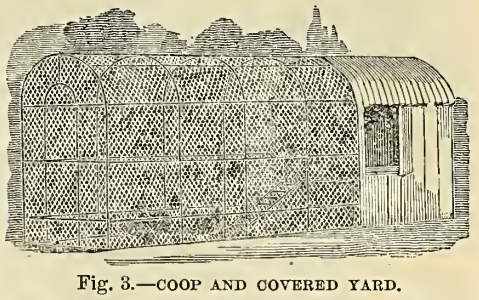


Fig. 3.—COOP AND COVERED YARD.

could not mix, and not to keep more than fifty or sixty fowls in each plot. It would be better to begin with twenty-five at first, which would be enough until it was found safe by experience to gradually increase the number in the flocks.

Milk as Poultry Food.—We have been trying milk as poultry food during the winter and can confidently recommend it to villagers and farmers who keep one or more cows for family use. Where butter is made and skim milk is plenty, it is a very valuable addition to the fare of the poultry yard. One main difference between winter and spring laying is owing to the absence of animal food in winter. The milk supplies this, and is devoured with eagerness. The skim and buttermilk may be poured into the feeding trough, and kept constantly by the fowls, or it may be mixed with scalded meal of various grains. Indian meal is a good ration once a day, but it should be varied with oat or rye meal, and with whole grain of wheat, buckwheat, or barley. In a warm room with a good southern exposure, and plenty of light, there is no difficulty in getting plenty of eggs from early pullets, and this is the time when eggs are of great market value. Later in the season, when the broods

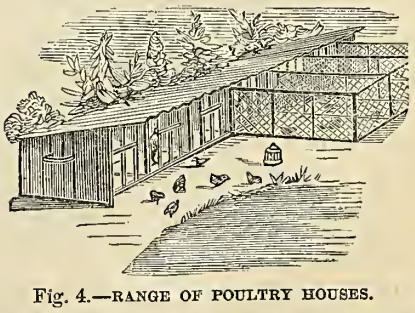
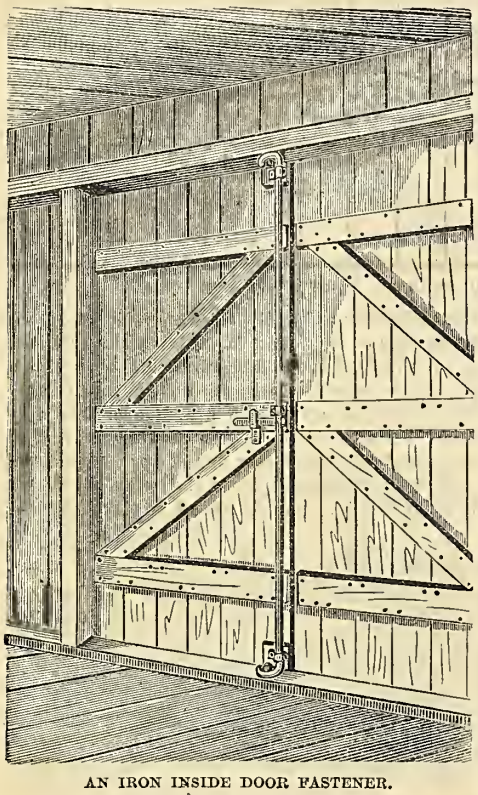


Fig. 4.—RANGE OF POULTRY HOUSES.

come off, milk, which will then be more abundant, will be an excellent feed for chickens, turkeys, and all kinds of young poultry, and will give quite as good returns as when fed to pigs.

Another Inside Door Fastening.

Last month we published three forms of inside fastenings for double barn doors, all of which were constructed of wood. H. Minton, Morris Co., N. J., hands us a sketch of another fastener, that is constructed of iron, and is highly recommended



AN IRON INSIDE DOOR FASTENER.

by Mr. M., and others, who have it in use in his neighborhood. The long iron rod running the whole length of the door, is ⅝-inch in diameter, and fastened to the inside of the door by three iron strips, as shown in the engraving. The ends of the rod are so bent that they act as hooks, passing around ½-inch iron pins, driven one at the bottom, and the other at the top of the door frame. The rod is turned by a small lever near the center, which acts on a pivot, and is put in a rest when the door is fastened. Any blacksmith can make the rod for this very convenient barn-door fastening.

What Shall We Raise?

The question above given interests every farmer, but especially those of us who live in the older portions of the country, where "farming don't pay," is so often asserted, and so often illustrated by those who assert it. The State Board of Agriculture of Massachusetts, held its winter meeting in December last, at Greenfield, in Franklin Co., in the N. W. part of the State. Those of us who attended from other States, found much to interest and instruct. The excellent dairy show held at that time, has been described in "Among the Farmers." A most interesting part of the proceedings, was a paper on the Agriculture of Franklin Co., founded upon the U. S. Census of 1840, and the State Census of 1875, and pointed out the changes that had taken place in the farm production, during 35 years. I wish that this paper could be read and considered, not only by every New England farmer, but by every farmer in all of the older States, where the farming of 50 years ago no longer "pays." The experience of the farmers in Franklin Co. shows that if "the times" change, we must change with them, and if one crop does not pay, we must then grow another that will. It appears from the paper referred to, that there are only five crops cultivated in Franklin Co., that show any substantial increase in the interval of 35 years. These are poultry, which rose from $9,678, to $31,155; hay increased from 43,853, to 61,056 tons; tobacco, from 600 lbs to 1,997,091 lbs.; dairy products, from $165,765, to $424,042. Broom corn is a new crop in the county, and only amounted to 13,579 pounds. Besides these crops which have increased, neat cattle, horses, and corn, show but a slight falling off, and may be considered fairly paying crops. There is a great falling off in the number of sheep, but the large increase in their value per head, and in the value of lambs sold for market, would probably make sheep raising a paying industry. In nearly all other farm animals and crops, there is a large falling off in production, showing that farmers do not consider it profitable to raise them. Swine, wheat, and rye, have fallen off nearly 200 per cent, oats more than 300, and potatoes, 100 per cent. The increase in poultry is about 300 per cent, dairy products about 400, orchard products 500, and tobacco still larger. Franklin County is in the heart of the New England dairy region, and probably shows as fairly as any county, the drift of eastern agriculture. The fair inference is that farmers are abandoning these crops which show so large a decrease, because they are unprofitable. Agriculture in the older States, is in a transition state, and we are slowly feeling our way to a better husbandry. The progress is very slow, but we are confident it is very sure. So much light is breaking out from our agricultural journals, our State and County Fairs, and our Farmer's Conventions, that we can not always grow crops that run us in debt, because our fathers grew them. We must inevitably get out of the ruts. Nothing could show more clearly than these statistics, the folly of raising crops that do not pay. Pork raising for the general market, does not pay, and it has fallen off 200 per cent in 35 years. Why, then, should we undertake to raise any more pork, than will supply the family? The raising of poultry does pay, for it has increased 200 per cent. Why should we not invest our capital and labor, in that which experience shows, pays well. A farmer with a good range, can raise a ton of turkeys, at much less cost than he can raise a ton of pork. The ton of pork would be worth in the village market this year, about six cents a pound, or $120.00 a ton. The turkeys eighteen cents, or $360.00. Why not raise turkeys? And so, of the other things that are proved to be profitable. Let us get out of the ruts, and raise those crops that are promptly called for. Farmers should keep a keen eye on the markets, and see which way the popular taste is tending, and plant, sow, breed, and in every way plan to meet the demands of the times.

Racks for Feeding in Yards.

The season for yard feeding is coming on, and some considerations about racks will be useful. The form of rack is important, because on that depends, in a great measure, the economy in the use of fodder. Frequently a large portion of the fodder is pulled out under foot and wasted; it is, therefore, necessary to provide against this in making the rack. Cows are quarrelsome and selfish, and it is instructive to see one filled and satisfied, but still

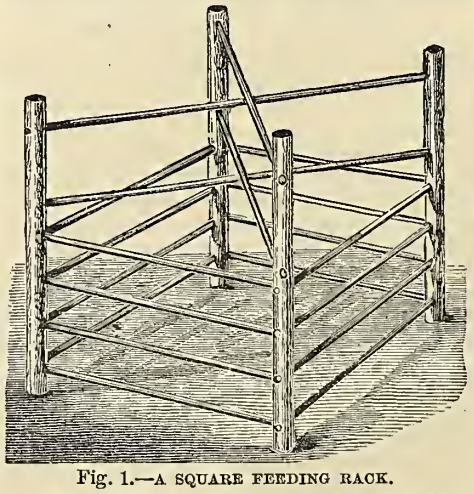


Fig. 1.—A SQUARE FEEDING RACK.

remaining in front of the rack so as to prevent her hungry sisters from getting a mouthful. This has to be provided against, so that each may get a share. A rack especially designed for this latter case is shown in figure 1. This is made of four stout chestnut or oak posts, 5 feet high. Lighter cross-bars are fitted in 2-inch holes, as shown in the engraving, to a hight of 30 inches, and close enough together as to prevent the fodder from being pushed out. Above these two, other cross-bars are fitted for the purpose of preventing the cows from pushing each other from the feed. A long rack, in which green clover, oats, or hay, can be fed is shown in figure 2. This is made of posts at proper intervals, and strips of boards or planks, 6 inches wide, spiked or bolted to the posts. A double rack is made in the middle, in which the fodder is placed. A rack for feeding meal, grain,

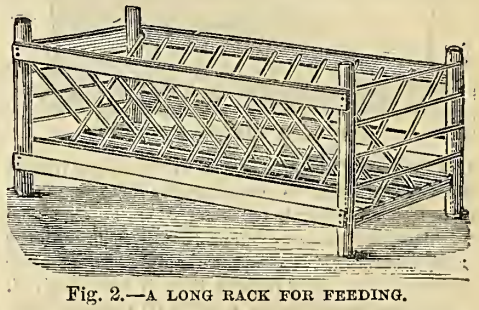


Fig. 2.—A LONG RACK FOR FEEDING.

or chaff, to cows or sheep, is shown in figure 3. This has a double slide, or hopper, the bottom of which is 3 inches or so above the floor of the rack, thus leaving a space for the feed to fall upon the level bottom from which the animals can readily eat it.

An Agricultural Creed.—It may be well to put down in black and white just what one thinks of any particular thing or class of things, and it may lead to good results if we subscribe to some

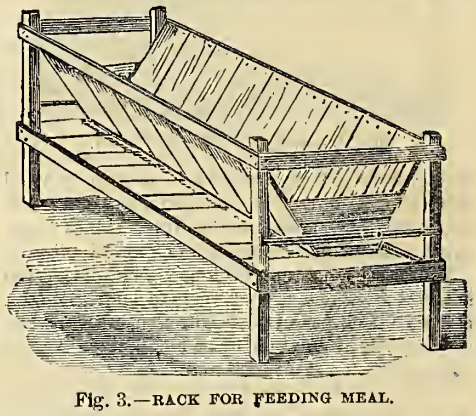


Fig. 3.—RACK FOR FEEDING MEAL.

formulated statement of the importance, and the varied demands of the best farming. At any rate this seems to have been the view of some of the agriculturists of Canada, who met in a convention and adopted for themselves the following *Agricultural Creed:* "We believe in small farms and thorough cultivation; we believe that the soil lives to eat as well as its owner, and ought, therefore to be well manured; we believe in going to the bottom of things, and therefore deep plowing, and enough of it—all the better if it is a subsoil plow; we believe in large crops which leave the land better than they found it, making both the farm and the farmer rich at once; we believe that every farm should own a good farmer; we believe that the fertilizer of any soil is a spirit of industry, enterprise and intelligence; without these lime, gypsum and guano would be of little use; we believe in good fences, good farm-houses, good orchards and good children enough to gather the fruit; we believe in a clean kitchen, a neat wife in it, a clean cupboard, a clean dairy and a clear conscience; we believe that asking a man's advice is not stooping, but of much benefit; we believe that to keep a place for every thing and every thing in its place, saves many a step, and is pretty sure to lead to good tools and to keeping them in good order; we believe that kindness to stock, like good shelter, is saving of fodder; we believe that it is a good thing to keep an eye on experiments, and note all, good and bad; that it is a good rule to sell grain when it is ready; we believe in producing the best butter and cheese, and marketing it when it is ready?"

The New Varieties of Coleus.

Plants with bright-colored or variegated foliage are of special value in this country, where our hot summers prevent us from doing much in the way of producing bedding effects with flowers. The intense heat that causes such a rapid development and short duration of flowers is, as a general thing, favorable to the growth and coloring of the leaves of the so-called "foliage plants." Among these plants the Coleus stands at the head; the old Velvet Coleus, *C. Verschaffeltii*, introduced some 20 years ago, is as popular and valuable as ever; a bed of its rich velvety dark maroon foliage, in contrast with the green of the lawn, presents a combination and contrast of colors of which the eye never tires, and which is pleasing in a place so small that it is the only decoration, or in extended grounds where it comes in as a part of an elaborate design. It was some years after the introduction of this excellent old plant that any others were offered, but new varieties came after a time, and of late each year has brought its "set" of new Coleuses, some of great merit. While our climate brings out the beauty of some kinds, it is very severe on others. Many of the so-called "Golden" varieties, in which the leaves present rich maroon or crimson, and golden yellow in beautifully contrasted markings, so long as the plants are partially shaded, when exposed to the full sun lose their markings and become all of the darker color. There are a few exceptions to this, as in the "Shah"; its leaves are curiously divided or halved by the two colors, and retain their beauty admirably. But however beautiful and brilliant the older Coleuses, they are completely thrown into the shade by the new varieties offered this spring. Both Henry A. Dreer, of Phila., and Peter Henderson, of N. Y., have been raising seedlings, the one with some seed from Australia, and the other with seeds from *Coleus multicolor* and *Chameleon*, and the results obtained by both are among the marvels of horticulture. As we examined the specimens sent by Mr. Dreer last fall, and by Mr. Henderson this spring, we felt that any painting or colored engraving that should exactly reproduce them would be looked upon as a freak in color by the artist rather than a true portrait of real leaves. In these new kinds the range of colors is surprising. Among yellows there are from rich cream through lemon to deep golden and orange; in reds from pale rose through every shade of carmine to scarlet on the one hand and crimson on the other, and deepening into maroon and chocolate; besides there are various lively tints of green. These colors are in veins, dots, blotches, and variously washed and blended in the most pleasing manner. All that our group of leaves from Mr. Henderson's varieties can do is to give the effect in light and shade, and show the general character of the markings; the picture must be filled out by imagination, and no effort of this can exceed the reality. Each of the florists named, after selecting from some thousands of seedlings, has some 50 varieties too good to discard. Like Mr. Ricketts with his wonderful grapes, their success has been "too unanimous," and they are overweighted with treasures. For descriptions of those that are offered, reference must be made to the catalogues. What will be their final place time only will show; if any considerable number retain half their present beauty when cultivated in the open ground, they will become among our most popular plants; if they fail to stand exposure, their usefulness will be limited to culture under glass. It is not easy to imagine a more beautiful sight than a greenhouse or conservatory would present if filled with well grown specimens of these new and wonderful Coleuses.

A COLLECTION OF NEW COLEUS LEAVES.

A New Cape Bulb.

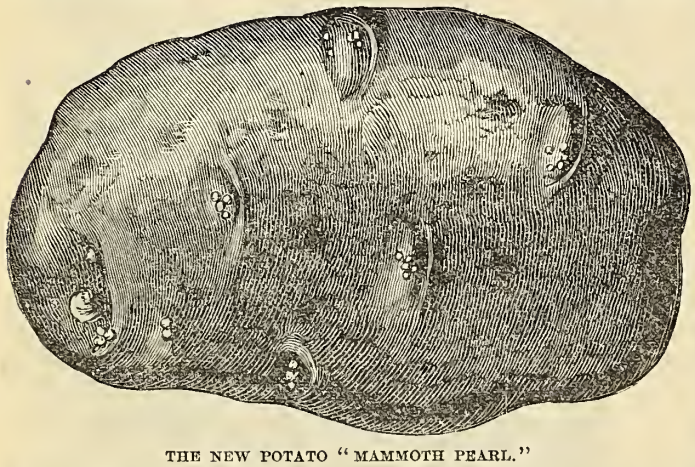
Last summer we saw in the grounds of Messrs. Woolson & Co. a plant quite strange to us; it might be described by comparing it to a miniature Gladiolus. We were so much pleased with its appearance that we brought away specimens for the sketches from which the accompanying engraving was made. The plant was introduced into Scotland long ago, some bulbs having been sent from the Cape of Good Hope to Mr. G. H. Potts, near Edinburgh, Scotland; here they were cultivated for many years, and it is only recently that it has received the attention of English cultivators. It turns out to be a *Montbrettia*, and in honor of the gentlemen who introduced it, is called *M. Pottsii*. It grows about two feet high, has plaited leaves, and a slender, wiry flower stalk which is often branched. The flowers are of a very dark, rich scarlet, quite close upon the stem, but not crowded, and turning to one side; they are an inch or more long, and of the shape shown in the engraving. One of its valuable qualities is the long time the flowers remain in perfection. It is useful for cut-flowers, as its spikes have not the stiffness and formality of some related plants, and its lasting qualities adapt it to this use. Though one would not expect to find a plant from the Cape hardy in our severe winters, it has proved so in England.

A NEW CAPE BULB (*Montbrettia Pottsii*).

and will be tested in that respect here. In England it is much valued for pot culture. When this *Montbrettia* becomes better known, we have no doubt it will be generally cultivated, as it has all the qualities which should make a plant popular.

The Potato "Mammoth Pearl."

A few years ago, earliness was the quality most sought for in a new potato, and it was regarded as the highest praise to say that a variety was "a week earlier than the Early Rose." Earliness is desirable, but it is only one of the good qualities a potato should possess. Ready steam communication has nearly obliterated our "times and seasons" for vegetables, and so far as putting new potatoes on the market goes, that is done by the southern



THE NEW POTATO "MAMMOTH PEARL."

grower, who will anticipate the northern market farmer weeks before he can dig his potatoes, no matter how early they may be. In fact, new potatoes appear in the New York market, before the New Jersey and Long Island growers have planted theirs. Of late, potato growers have given attention to health, keeping and eating qualities, uniformity of size and productiveness in a variety rather than its earliness. Last spring Mr. J. A. Everitt sent us a sample of his new variety, the "Mammoth Pearl," for trial; they were accompanied by claims for a yield that seemed improbable—yet the raiser was convinced of their truth for he had sent the potatoes to allow us to prove or disprove them. Before the potatoes could be planted, a horse had got loose in the night and helped himself to the "Mammoth Pearl," and there were only a few eyes saved from the wreck. These eyes were planted, and when the few hills were dug, they, as far as they went, bore out the claims for productiveness. But one is not justified in recommending a potato for general culture from his experience in raising a bushel, though that quantity will allow him to judge of the quality. The "Mammoth Pearl" is large, its general shape is shown in the engraving, which is about two-thirds the average size. Being usually flattened, no part of the interior is so far from the surface that it does not cook through equally, and when cooked is very white and mealy and of excellent quality. The skin is smooth and of remarkable whiteness; circular says, "whitest of any variety." The eyes are few and even with the surface. Its keeping qualities are all that can be desired. In the important matter of productiveness the raiser makes the claim that it is the "most productive of all varieties grown in America," and "yielding double or triple any ordinary kind." We might regard this as extravagant were it not supported by testimonials, in some cases from persons well known to us; what they say is supported by our own limited experience, so far as it goes, and we have no doubt that the "Mammoth Pearl" will take a high rank as a cropper. As to season, it is medium early, reaching maturity along in August.

Rhubarb.—Some thirty years ago, the writer procured of Hon. Marshall P. Wilder a few roots of "Myatts' Linnæus" Rhubarb, and though we have since changed residence several times, the descendants of the same stock are still in the garden. Rhubarb comes so early in spring; is so palatable and wholesome, whether stewed for sauce or made into pies, and sells so well in the village market, that no good housekeeper can afford to do without. As to varieties, after trying several later kinds, the "Myatts' Linnæus" has the preference. It is large enough, is of excellent flavor, not too acid, easily cultivated, and prolific. A dozen roots planted three feet apart each way, will supply an ordinary family and leave a surplus to give away or sell. The roots ought to be divided in fall or very early spring once in four or five years. A single eye with a vigorous root will make a large stock in a single season. The stalks may be plucked the second year, only care should be taken that leaves enough remain on the plant to keep it in vigorous growth. For a new plantation of Rhubarb, select rich well drained soil well exposed to the sun. Much of the profit of growing it for market depends upon its earliness. It is a gross feeder, and should have abundant supplies of manure every fall or spring, forked in around the plants. There is no danger of making the ground too rich. It bears forcing well. The season may be anticipated three or four weeks, by putting a common hot-bed frame and sashes over the plants where they stand. Rhubarb comes at a season when the winter apples begin to fail and before the strawberries ripen. It ought to have a place in all our village and farm gardens. It starts with the crocus, and is among the earliest plants to welcome the spring.

The Lettuce Mildew.

For a number of years the market gardeners in some localities have suffered more or less severely from the attacks of a mildew on their early or forced lettuce. This spring the numerous complaints led us to inquire into the trouble, which had reached

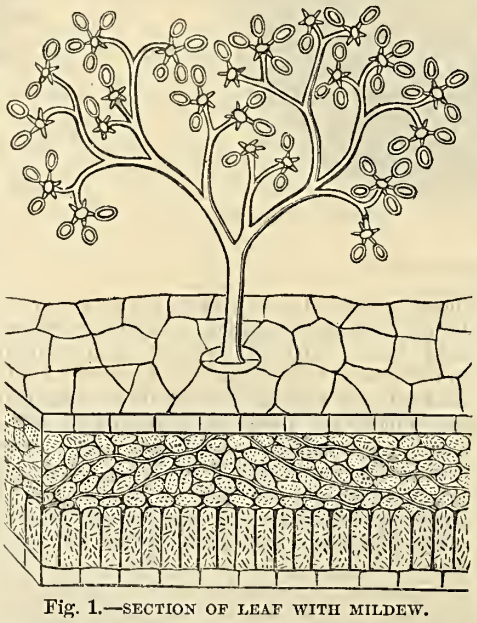


Fig. 1.—SECTION OF LEAF WITH MILDEW.

such magnitude, that one gardener assured us that it was taking away from him, and those engaged in the same business around him, the source of their very living. The following circular was addressed to many of the leading growers of early lettuce, Secretaries of State Horticultural Societies and others from whom information could be gained:

245 BROADWAY, NEW YORK, *Jan. 14th*, 1880.

"*Dear Sir.*—In order to become more thoroughly acquainted with the prevalence of the *Lettuce Disease*, the following questions are proposed. It is desired that they receive the early attention that the importance of the subject demands:

1. Have you been troubled with any disease of your lettuce, and if so to what extent?
2. So far as you can judge, what is the nature of the disease?
3. What part of the plant is first affected, and what are the conditions of the weather, soil, etc., when the disease prevails?
4. Have you tried any remedies; if so, what, and with what results?
5. Are some varieties of lettuce more susceptible than others?

Please add any other information on the subject that may not fall under the above questions, and greatly oblige, etc."

From the responses to these questions we infer that the Lettuce Disease is at present confined to the Atlantic States, and that it is most prevalent in those localities were lettuce has been grown upon the same ground for a considerable length of time. There is no doubt but that it is a fungus, as a microscopic examination of the specimens from Newark and Jersey City both abundantly show; in fact the mildew upon the lettuce is not a new thing, it having been described a number of years ago. It first manifests itself upon the older and outer leaves as a fine frosty coating, soon causing the leaves to turn dark-colored, wilt down, and rot away.

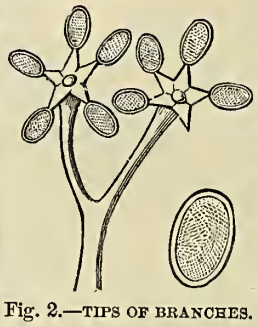


Fig. 2.—TIPS OF BRANCHES.

The Lettuce fungus is a near relative of the grape mildew, belonging, as it does, to the same genus of parasitic pests. In general structure, methods of growth, and propagation, it is therefore much like that of the mildew of the grape, which was fully described in the *American Agriculturist* for September, 1879. It is to be remembered that these mildews are exceedingly small, and in presenting any illustrations of them they can only be those of greatly magnified views. When the actual surface of the lettuce leaf is examined with a hand lens, the white substance resolves itself into a miniature forest of small stems and branches.

In figure 1 a highly magnified view of a cross section of the lettuce leaf is shown, with a single mildew branch, passing out of a breathing pore of the leaf where it divides quite regularly and forms a tree-like top. The tips of the branches are of a peculiar star-like form, and from the radiating points the spores (or seed-like bodies) are formed and when ripe are easily detached. Figure 2 shows a much higher magnified view of two of these ultimate branches with a single separated spore drawn on a still larger scale.

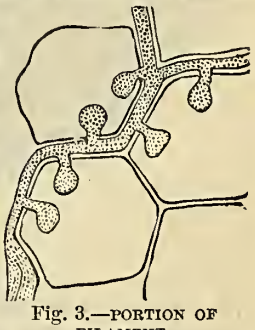


Fig. 3.—PORTION OF FILAMENT.

The portion of the fungus beneath the surface of the lettuce leaf consists of winding threads which, as they pass between the cells of the lettuce tissue, form projections that pass through the cell walls and serve as *suckers* to absorb the substance of the cells. A highly magnified view of a small portion of an embedded thread is shown in figure 3. This is the real nature of the trouble, a multitude—a forest so to speak—of small plants, living upon and drawing away the very life of the lettuce.

In the way of remedies we have, up to the present time, but little to suggest. The fact that the trouble is in nature very similar to the grape mildew, and that the use of Flowers of Sulphur has proved the most effectual in the latter case, it is to be presumed that it also is the remedy for the lettuce mould. There is this difficulty in the use of Sulphur in the case of lettuce; the foliage is the portion both dusted and eaten, and unless the leaves are thoroughly washed—as they ought to

be any way—a sense or suspicion of eating sulphur would be developed that would tend to greatly diminish the consumption of this excellent green food. Lime sprinkled upon the plants has proved of considerable value in some cases as our correspondence indicates. In those localities, or rather on that soil, where the crop has been ruined, it is suggested that the growth of lettuce be abandoned for a time, for there is no doubt but that the soil has become foul, so to speak, and an absence of the lettuce plant is essential to the eradication, by death by *starvation*, of the minute fungus spores.

Have You a Strawberry Bed?

This question is put to every reader who has the land, and especially to every farmer, who, having the land, is very apt to not have strawherries. Without taking space to inquire why the farmer, who of all others should have an abundance, so generally has no strawberries, we put in our plea for his family, and insist that he shall provide them with this excellent fruit—not only a few as a luxury, but an abundance. There is just one time to make a strawberry bed, and that time is now! Under any circumstances a strawberry plant must grow a season before it will give a crop; there is no way in which plants may be set this spring and give fruit the same season. If any "nursery agent" offers such—don't buy them. Much that has been said about strawberry culture has conveyed the impression that it is a great deal of trouble; that runners have to be cut off and much care given otherwise, while in fact it is no more trouble to raise strawherries, than it is to grow carrots. But the cost? Is very little—nothing compared with the result in fruit. One can begin as small as he pleases; if he can not afford the outlay for a large bed, let him buy enough for a start and raise his own plants. It makes no difference where the farmer may be, if he gets the *American Agriculturist*, he can have strawherry plants—the mail brings both. A dozen, or a hundred plants come by mail, and when one has even but a dozen plants, his strawberry future is provided for. "It is the first step which costs" is a proverb. In this case "it is the first step which tells." While we have in view especially the family comfort, it may be well to consider that in most localities enough herries can be sold from the first crop to pay for the whole outlay—only don't sell and let the family go without, but have enough for both demands.

"*How many shall I plant?*" will he one of the first questions to decide. An ordinary family should have at least 200 plants, and generally 400 will not be found too many if the fruit is used freely. It is better to provide for an abundance.

What kinds?—If restricted to one kind, we have no hesitation in saying, Charles Downing. If there are successful strawberry growers in the vicinity, find what does best with them and plant the same kind. But we do not advise planting all of one kind. If 400 plants are set there may safely be four kinds. Charles Downing, Monarch of the West, Champion, and Sharpless, would be a good selection, but it may be varied and not go amiss.

How to Plant.—Select a good bit of soil, all the hetter if it was in potatoes last year, and if practicable within sight of the house, and prepare it just as you would for a good crop of cabbages; this means an abundance of the best manure well worked in. Mark out the rows two feet apart, three if a cultivator is to be used, and set the plants one foot apart in the row, using a trowel to open the ground, and when the plant is put in, crowd the soil down firmly over the roots with both hands. Thereafter run the cultivator, hoe, or rake, often enough to make the soil mellow and keep down the weeds. The plants will by and by throw out runners; turn them into the row and let them take root. For the after treatment of the bed, consult "Notes about Work" at the proper season.

Raising Plants.—If it is preferred to buy a few plants to start with and raise a stock to put out next year, set these two feet apart each way, and let runners form. Ashes are very useful to promote a large growth of runners. Finally, plant strawberries—and be sure to do it this spring.

That Grape Vine.

Two years ago (1878), knowing that there must he few, if any, among our readers, who could not somewhere find a place for a grape vine, we insisted that one vine at least, should he planted, wherever there was a bit of soil, no matter if it were in the smallest of village or city hack-yards. In a series of articles headed, "One Grape Vine," we gave minute directions for its planting, and showed how it would grow through the summer, and what should be done with it. That these articles led to the planting of a great many vines, our correspondence shows, and even now we have letters, asking advice as to that "One Grape Vine." The greatest number of letters at the present season, are with regard to pruning and training, and they especially ask as to the treatment of old and neglected vines. Pruning ought to be done in the fall, or in the very early spring, long before the swelling of the buds shows that vegetation has started. If the vine is cut after root action has commeneed, there is a flow of sap so copious, that it is popularly called "bleeding." While there is a great difference of opinion, as to the injury resulting from bleeding, we are confident that it can do no good, and it is better to avoid it. A grape vine is so tractable, that it

Fig. 1.—A CANE.

Fig. 2.—THE SAME IN GROWTH.

may be perfectly adapted to a great many places, if we only direct it properly, and to do this, we must learn a few things about its growth, and work in accordance with them. If one clearly understands the manner in which the vine—every grape vine—grows, all mystery and difficulty will disappear. One important point—and one which many who see a vine daily fail to observe, is this: the fruit is always borne upon a shoot of *the present year's growth*. To understand this, let figure 1 represent a young vine, or a branch of an old one, large or small. This branch grew last season, and is just as it was left when the leaves dropped last fall, and as it will be before growth starts this spring. The vine is seen to be in sections or joints; there is a bud, a piece of vine, longer or shorter, according to the variety, or the luxuriance of growth, then another bud, with a piece of vine, and so on, for the whole length. Observe that no two successive buds are upon the same side of the vine; if bud No. 1 is on the right side, No. 2 will be at the left side; No. 3 right, and so on alternating, for the whole length. Unless they have been removed, or accidently broken off, there will be *opposite* each bud, a tendril, or the remains of a stem which bore a cluster the season before. These points where the buds are placed, are properly joints, but we commonly give that name to the portion of vine between two buds, and speak of a variety as "short-jointed" or "long-jointed." The botanists name, for this point of the stem

Fig. 3.—CUT BACK.

where the bud is placed, is *node*—a not difficult name and one that has a definite application. Every branch of vine a year old, or *cane*, as it is called, has its *nodes*, with a bud and a tendril or remains of a cluster at each, and these nodes are separated by longer or shorter joints or *internodes*. When growth

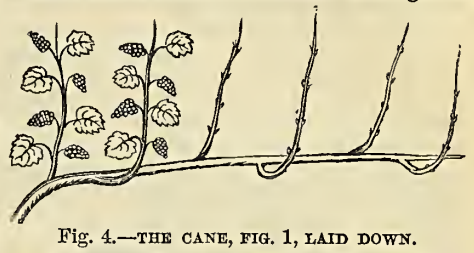


Fig. 4.—THE CANE, FIG. 1, LAID DOWN.

starts in figure 1, the buds will swell, burst open, and a small, tender shoot will begin to lengthen. Examine this young growth; when but a few inches long it will he seen to have nodes and internodes; and at each node a leaf, opposite which is a tendril or a cluster of minute buds, which look like and are often taken for young grapes.

If the cane (figure 1) is untouched, but allowed to grow just as it is, it will soon appear as in figure 2. A shoot coming from each bud, the uppermost shoots, the tendeney of the sap being towards these, will be the most vigorous and will grow away rapidly, robbing those below of food. The lower shoots will in this case be smaller and weaker, and some of the lowest buds may not start at all. It will be seen that if a vine is left to itself year after year, the most vigorous shoots, those which bear the fruit, will be further and further away from the root, and the vine will become a taugled mass of weak stems. If instead of allowing the vine (figure 1) to have its own way, we cut it off where the cross line is placed, all the nutriment that would have gone to several shoots will go to the two that remain, and we shall have instead of a vine, like figure 2, one as in figure 3, where there are two strong shoots, bearing their fruit buds down where they are within reach and being better fed, both leaves and fruit, and the shoot itself, will he altogether larger, and more vigorous and healthy. If instead of cutting off figure 1, as here described, we bend it down and fasten it in a horizontal position before growth hegins, we shall change the condition of things; the shoots from a more equal distribution of food—or sap—will start more alike; the uppermost can not rob the others. In practice, in making an *arm* in this way, all the buds are not allowed to grow, as they would be too much crowded; but this diagram is merely to illustrate the principle. Let us now suppose that instead of cutting figure 1 back, as in figure 3, or bending it down as in figure 4, we want our vine higher—as soon as the buds have started and have grown an inch or two, we rub or break off all but the two or three topmost buds, as the case may be, and the shoots from these may he carried out horizontally, as in figure 5, or continued in an upright direction as we may prefer. These illustrations are sufficient to show how easily a vine may be controlled and placed where we wish it. Observe that each shoot is but a repetition of the originial cane, and that each shoot, when ripe in the fall, will become a cane like figure 1. By fixing these points in the mind: that the growing vine is made up of a succession of joints, furnished at intervals with a leaf and opposite this a tendril or a cluster of grapes, and that these alternate, the matter becomes very simple. The management of the growing shoots must be left for another month.

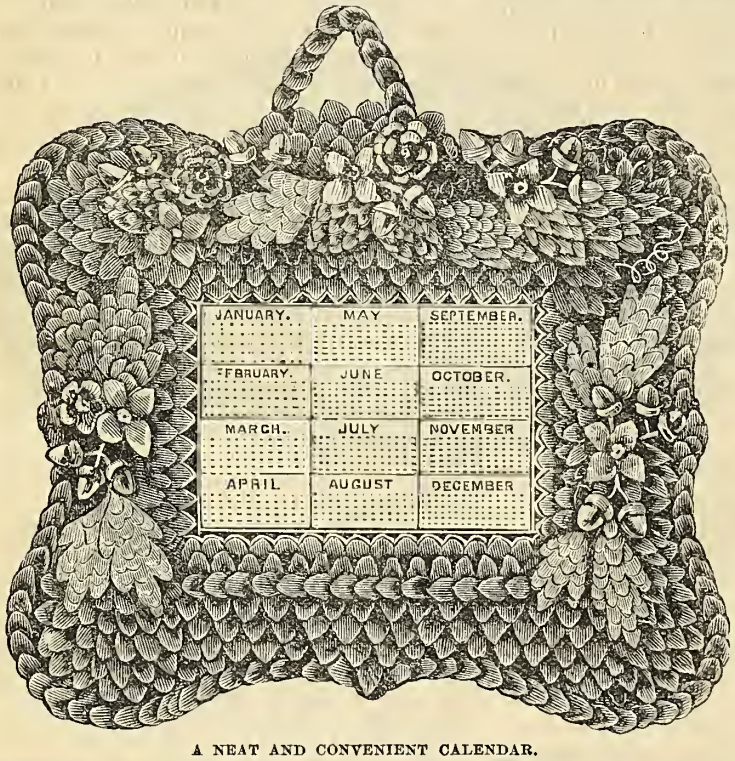
Fig. 5.—SHOOTS HIGH UP.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

A Framed Calendar.

The almanac, formerly regarded as one of the necessities of every household has in great measure given place to the calender. The ordinary almanac contains much more than one has any use for, and the trouble of turning to the month and day is avoided by using a tablet calendar, or one which gives the whole year on a single page. Calendars are numerous, the various insurance companies, patent medicine men, and even merchants sending them out in great abundance, for the purpose of keeping their names and their business before the eyes of the public. But we do not care to be told that some wizard's "gargling oil" is the only limb preserver in the world, or that life depends upon the use of somebody's pills, especially if we have a regard for our family physician. A year of advertising upon our walls of any thing, no matter how good, is more than we care to give in exchange for a calendar. A calendar can be provided which has none of these objectionable qualities, but may be a real ornament to the room, as well as a convenience to the household. The accompanying engraving suggests such an one that may be constructed by any one who has a taste for home decoration. It consists of a plain card-calendar, which may he prepared from any one of many of those which are so freely distributed, by cutting off the objectionable surrounding border, and leaving a simple truthful card of the months and days. This card is then to be set in a neat frame, which may he constructed in a variety of ways, and of a number of different materials; in fact it allows of the exercise of a wide range of taste.



A NEAT AND CONVENIENT CALENDAR.

The one shown consists largely of the scales of pine cones with clusters of acorns, scattered here and there. For such a frame a foundation of heavy card-board is required which is cut in outline to correspond to that desired in the finished frame, to which the scales are sewed with stout silk thread. As a protection from flies and dust it will be well to cover the calendar with a sheet of glass, which can be secured to the foundation pasteboard by bits of wire or small strips of tin at the four corners, which are hid from view, as is the entire outline of the glass, by the overlapping pine scales. When constructed a handsome finish may be produced by giving the frame a coat or two of varnish.

Bits of Soap.—It was once noticed that a cook, who was neat and economical, kept a tin can on her kitchen dresser from which tomatoes had been emptied. Farther inquiry revealed the fact that it was the receptacle for little odds and ends of soap that had become too small to use in washing. Occasionally, water was added, and the contents put upon the stove until they melted. Thus a tin of soft soap to be used in dish washing was manufactured from scraps that are generally thrown away.

Look Well to the Pork Barrel.

The large amount of tainted, "rusty" pork that is consumed every year is sufficient evidence that it is not, in many cases, packed in a proper manner. That pork may be kept sweet and good, care and good judgment must be exercised. In the first place the barrel into which pork is placed must be perfectly clean. It should be subjected to a scalding as thorough as the neat dairy-maid gives her pails and pans. The old brine will be good to use again if it is boiled and all impurities removed by skimming. The salt used for packing ought always to be the best coarse kind. The pork should never he cut up or laid in the barrel until perfectly cool, but *not frozen*. The pieces should be so cut that the barrel can be closely filled in regular layers. Put on plenty of salt between the layers, and after a few days pour on the brine until the meat is entirely covered, when a close-fitting board is put on and kept down in the brine by a large stone. This board and weight should always he replaced after having taken out pork, and kept on at all other times. The pork, to insure good keeping, must always be submerged in the brine. Keep the pork barrel in a cool place, and let the brine be always saturated, *i. e.*, so it can take up no more salt.

Hints on Household Matters.

BY A DELAWARE HOUSE-KEEPER.

MENDING A CARPET.—My dining-room carpet was only a rag carpet to begin with: latterly it had become a ragged one. I was contemplating it ruefully one day, knowing that the state of my purse would not allow me to replace it just yet with a new one. I could think of no way to mend it, but by big patches tacked in place. In the midst of my dilemma an experienced old lady entered, who suggested paste instead of tacks. "I have repeatedly put muslin patches over the carpet with paste," said she, "and it is surprising how well it holds." I took the hint. Patches are not, in their nature, beautiful, yet a patched garment is decidedly better-looking than a ragged one, and the same is true of a patched carpet, and my patches were so easily applied and proved so adhesive, that I rarely sweep the room without a mental benediction upon the one who suggested it.

CUTTING HOT BREAD.—One day company arrived unexpectedly. Supper was just over and no bread had been left. I had just taken from the oven some delicious-looking light bread, but it was too hot to cut. We live in a country place where there is no baker. In my bewilderment, I happened to remember that in Mrs. Whitney's Cook Book "Just How," she suggests heating a knife, in order to split open a hot short-cake. Why, thought I, may not smoking-hot light bread, be sliced with a hot knife! It is the cold surface of the steel applied to the warm dough that produces a disagreeable clamminess. I heated my carving knife and tried it. The bread sliced beautifully, and as I piled it up to bring to the table, I put it on a plate upon which I had laid a fresh napkin, for the contact of the hot bread with the cold plate would have produced the same sodden clamminess on the surface of the lower slice. Of course, I would not recommend the slicing of hot loaves except upon emergencies. As a frequent diet it might prove injurious, but not more so than other warm breads.

PUTTING AWAY TUBS.—A very little thing, yet worth knowing. One week my regular washer woman could not come, hut sent a substitute. When she returned, on the following week, I found her tugging away at a nest of tubs, finding it almost impossible to pull the inner one, from the enclasping outer one. "I never have this trouble," said she, "when I put the tubs away myself."—"How do you avoid it?" I questioned.—"Why do you not see she has put all the handles in a straight line. Now I always set them away, so that no two handles shall come together. Then, if they do swell I can have thorough use of the handles, and with them the tubs are soon separated."

TURNIPS ON THE GRIDDLE.—I had seen for some time a statement going the rounds of newspapers, that a turnip used in rubbing the griddle, while cooking griddle-cakes, would give the desired smoothness and do away with the unpleasant smoke. I doubted it, but a trial soon convinced me that the statement was correct. I found, however, that at times, it was necessary, when beginning, to put a very little grease on the turnip, but this made no appreciable smoke.

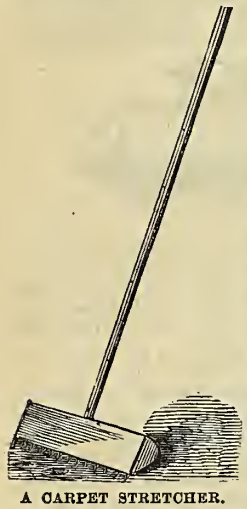
RIGHT AND LEFT.—My little boy was left-handed. I had found, by experience, that school-life would be particularly irksome to him, if that defect were not remedied before he began school. It was useless for me to try to persuade him to draw pictures on his little slate with the right hand. That hand was really weaker than the other; he could not guide it. So I made little pictures on the slate, nothing intricate, then rubbed them off with my finger till only the dim outline could be seen. These I required him to trace. The weak hand that could not originate a line, could, little by little, approximate the rubbed outlines. Afterwards, by the same plan, I taught him to write the letters of the alphabet, and by the time he was old enough to go to school, he had learned to use his right hand.

A BABY TENDER.—My baby was creeping all over the floor, and I had no nurse for her. There were times when she drove me nearly distracted. When I was busiest, it seemed to me she crept into the most dangerous places. Just imagine a woman, busy preparing dinner. Except herself, baby is the only occupant of the room. She opens the oven to baste the roasting beef. Just as her entire energies are directed to the operation, baby takes advantage of her stooping position and creeps up on her back. She cannot dislodge the child, and it is with extreme difficulty that she replaces the hot pan without an accident. I frequently found myself in such positions. At last I thought of a remedy, I procured a dry-goods box, or such a box as shoes are generally packed in; its dimensions were as follows: depth half a yard, width fifteen inches, and length one yard. This I put in one corner of the kitchen. Whenever I was particularly busy, I caught up the darling and *boxed* her. She might dislike her close quarters, might struggle to be free, but at least she was safe. But in a little while she did not dislike her prison. She learned to pull up by the sides and look over; she took her first steps supported by its sides, which were at a convenient distance apart; bye and bye, she would walk from end to end in her efforts to be near me as I moved about the room. But it is a clumsy affair. I shall have a much better one for the sitting room: it is to be made of the same dimensions but simply a skeleton frame, except that the floor is to be solid. Upon this frame, which is to be very smooth around the top, I shall tack wire-gauze; the entire stucture is to be on casters, that I may easily roll it about, a long flexible strip is to be tacked from side to side like a basket handle. From this, I shall suspend the toys I find amuse

her, and I rather think my home-made Baby Tender will be a comfort. Some bright bits of Brussels carpet, which I have been saving, will, when nicely bound, come in place as a rug for baby's box.

Household Notes and Queries.

PUTTING DOWN CARPETS.—One of the most tiresome incidents of house cleaning, is the putting of the carpet upon the floor, and so much depends upon its being done well, that it is a matter of no little anxiety with many neat house-keepers. The stretching of the carpet so that it will fit closely to the floor, is the important point. Carpet stretchers of various kinds, may be had at the stores, at greater or less cost, but a home-made one can be constructed in a few minutes, and at little or no outlay. This is made, as shown in the engraving, by nailing a short piece of hard-wood to a suitable handle; into this piece, or *head*, a number of nails are driven, and afterwards sharpened with a file, to form teeth which will catch hold of the carpet. The stretcher thus made, is to be used with a pushing motion, and it will be found to save much strength, keep knuckles from getting sore, and the back from many an ache.



A CARPET STRETCHER.

STOVES, AND THEIR TAKING DOWN, will soon occupy the attention of house-keepers. In many dwellings, the stoves, with the exception of that in the kitchen, are all taken down, and put out of the way at house-cleaning time, and before the end of this month, there will be many a cold sitting room, and generally desolate, not to say sick, household, from this very reason. There are pleasant days in April, and warm, sultry ones in May, but they are followed by cold spells, which call, and often loudly, for a fire in the room, for the comfort and health of the inmates. Of course a stove takes up some space, and a room with the stove removed is more capacious, but when space is obtained at the expense of all comfort in the room, it is bought too dearly. Both comfort and health are in favor of the old principle, of not taking down the stove until its use is at an end, be it at the end of June, or when the stove is worn out. In our changeable climate there is hardly a month without a day on which a little fire at night, or in early morning, is not desirable, especially for invalids, and there should be some room, other than the kitchen, where one may be started at a moment's notice.

IS RHUBARB WHOLESOME?—Every once in a while there appears a newspaper paragraph stating that the acidity of Rhubarb stalks is due to Oxalic Acid, and therefore poisonous. This would be "important if true," but fortunately for those who find in Rhubarb a most acceptable substitute for fruit, it is not true. The acidity is due to a mixture of Malic and Citric acids; the one being the acid of apples and the other the acid of lemons.

Mildew on Cotton Cloth.

Every house-keeper is aware that the unwelcome dark spots known as Mildew, are more apt to appear upon articles of cotton or linen that are starched than upon those which have not been so treated. All cotton goods are starched in their manufacture, indeed before they are manufactured in the sense of being woven. The yarn, as the threads are called, whether it is to form the "weft" or "woof" of the fabric, is "sized" as it is termed, which is simply dressing the yarn with a paste of some form of starch; the fine threads which are wound upon one roller are transferred to another roller that is placed several feet distant from the first. As the threads or yarn slowly pass from one roller, the paste or "size" is applied by means of a brush. The sizing thus applied to a certain extent strengthens the threads, and as it makes them vastly more manageable in the process of weaving it is a proper thing to do. But some weavers having learned that a sized thread was a great deal larger than one not sized, have shown much ingenuity in coating a small thread with a great deal of size, and not only this, but have contrived to add to the sizing China Clay and other substances, and thus coat the threads with a large amount of foreign matter. Cloth woven of such threads, while it appears very close and heavy, when washed loses all this filling and appears in its real character—a poor, thin, slazy stuff, quite unlike that for which it was bought. English manufacturers, especially, have carried on this excessive sizing and filling with goods for the Eastern markets, and for the half savage people in Africa and elsewhere to an enormous extent. One of the first things such people buy is cotton cloth, and wherever American cottons, with only the necessary amount of sizing have appeared in competition with the oversized stuffs, the latter have been driven out of the market. But another trouble has come upon the makers and sellers of highly sized stuffs; they have proved to be highly susceptible to mildew, and great losses have been sustained on account of the injury from this cause. Indeed so important has this matter become to English manufacturers that

A MAGNIFIED VIEW OF CLOTH WITH MILDEW.

a book has recently appeared for their benefit, entitled "Sizing and Mildew in Cotton Goods." We have often shown that the plant mildews, like those of the grape, lettuce, etc., and the various moulds, are really a minute vegetable growth, consisting of plants, so small as to only be seen when highly magnified, but just as much plants as a cabbage or an oak, and like these larger plants they must have something to live upon. The leaf, and other part of the plant bearing these mildews and moulds, are fed upon by these minute plants and their substance broken up and destroyed; so with the cloth mildew; it feeds upon the starch used in sizing, and if it does not feed upon the fibre of the cloth itself, it so injures it as to cause it to decay and become worthless. We may look upon the injury mildew causes these oversized cotton goods without any very great regret, as it is one of many ways of expressing the fact that "honesty is the best policy," and may even find in the mildew a beauty which the dishonest manufacturer fails to see. The work referred to gives illustrations of the mildew as seen by the microscope, one of which is here reproduced. The engraving shows a highly magnified bit of mildewed cloth, in which the threads are shown very large, with the various kinds of mildew plants running over and among them as irregular twisted and knotted lines. "No less than 27 different kinds of moulds and mildews have been detected on cotton cloths." The mildews which annoy the house-keeper are similar in appearance to those here shown. The best preventive of mildew is dryness, as the minute plants can not appear and make their growth without a certain amount of moisture. Fabrics that are to remain for a long time unused should be put away without first starching.

Work with Scroll or Fret Saws.

Within a few years, scroll or fret-saws have been brought to a great perfection, and the use of them, is to some a profitable employment, while to others it affords an attractive and pleasing pastime. The products of the scroll-saw are becoming frequent in household conveniences, and in the decorations of the parlor and drawing room. The windows of store-keepers who deal in these goods, present finely, and frequently elaborately wrought designs on exhibition, which are truly works of art. In the accompanying engravings, two specimens of scroll-work are given—those that workmen of average skill could make in a short time.

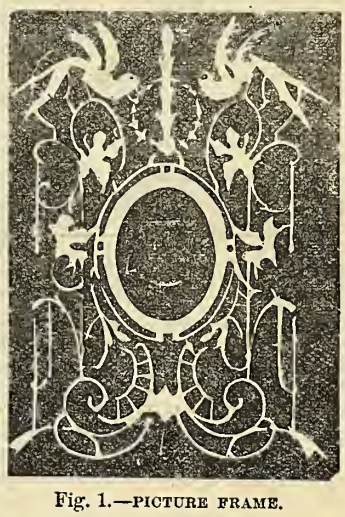


Fig. 1.—PICTURE FRAME.

The design in figure 1, is for a carved frame for a cabinet photograph, some small painting, or other picture, the whole to rest on an easel, wrought from the same kind of wood. Figure 2 shows an easel of an elaborate design, with the picture itself in scroll-work. The number of designs, of which those given are but samples, is limited only by the skill of the artist, and that of the workman at the saw. The dealers in scroll-saws, have a very large assortment of suggestive designs, which they distribute freely in the form of sheets and catalogues—and of themselves make a very pretty collection. The uses to which scroll-work can be put in the household, are various; wall pockets, thermometer frames, brackets, card baskets, lamp mats, toilet cases, card holders, etc., etc., are but a few of the many. Those designs that are purely for ornament, can be used to decorate the windows by suspending these near the glass by a fine thread, where they show off to good advantage, both from within and without. But in order to get the very best effect, the scroll-work should be of the whitest of wood, and then provided with a black back-ground. Merchants have in many cases availed themselves of the attractive and pleasing contrast thus produced, by putting their names, or those of their goods, in white-wood scroll-work, and then providing it with a black back-ground, in their shop windows, or show cases. In household decoration, nothing seems more appropriate than black velvet, but any other rich cloth of the same color would answer. Ornamental work like that shown in the engravings, may be of any size, but for ordinary mantels, a background of a square foot in area, is the most acceptable. The whole, when completed, can be placed upon an easel. The low price of scroll saws puts them and their products within the reach of all.

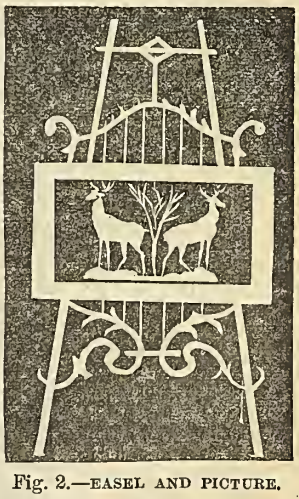


Fig. 2.—EASEL AND PICTURE.

BOYS & GIRLS' COLUMNS.

The Doctor's Talks.

If at play you accidentally run against another boy, you may hurt him, may even throw him down with great violence. But how is it with yourself? I recollect that in some play at ball or other game I ran against a boy I did not happen to see, and while he went down, I struck with such force as to "knock the breath from my body," and I suffered so much for a few seconds that I have never

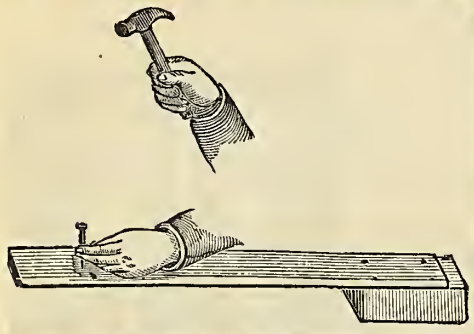


Fig. 1.—DRIVING NAIL IN A SPRING BOARD.

forgotten it. The boy was standing still, I went against him with great force, sufficient to knock him down, and I was badly hurt. This is one of the earliest illustrations I can recollect of having learned of what is laid down in the books as one of the laws of motion, which is:

ACTION AND REACTION ARE EQUAL.

If you strike the table with the hand, the table reacts with the same force. If you fire a ball from a gun, the explosion of the powder pushes the ball in one direction and the gun in another; the ball goes to a great distance, the gun moves but little. The force of the powder is spent in moving the gun, which is very much larger than the ball, and, if the gun is held close against the shoulder, is communicated to your body also. When you jump from a big rock, you push yourself with a certain force, and by the spring of your knees, etc., throw yourself to several feet away. Now you push the rock with the same force that you do yourself, and through that the whole

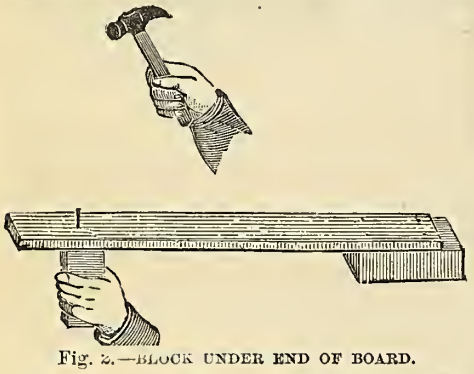


Fig. 2.—BLOCK UNDER END OF BOARD.

earth, but these are so vastly larger than yourself that the motion given to them by your jumping can not be measured. If, instead of a rock, you jump from a small boat, the case will be different, as the movement of the boat will plainly show; indeed, in even stepping from a small boat one has to be very careful else he will be a dripping illustration of the fact that "action and reaction are equal." We see this in the flight of a bird; the bird beats the air down with its wings, the air on the other hand reacts and raises the bird. In rowing, we push the oar against the water; the water in turn reacts against the oar, and the boat is sent through the water. In our talks about Matter and such things, we shall have use for a word, and it is one that we will now and then meet with, which is

MOMENTUM.

If you look in the books to find what Momentum is, you will learn that it is "the mass of a body multiplied by its velocity,"—a perfectly correct definition, but one which may not at first give you a clear idea as to what is meant by Momentum. If I were to say that it is "the amount of *go* there is in a body," it would not be very elegant, but perhaps you would understand it better. It is the force with which a body in motion strikes against another at rest. A stone will easily hold up a hammer; we may press the hammer against the stone as hard as we are able without changing the stone, but with a very quick blow of the same hammer we can break the stone at once; in other words, we have given momentum to the hammer head—and motion joined to weight will accomplish what weight alone failed to do.

A SMALL BODY MOVING SWIFTLY

may have a greater momentum than a large one, going slowly. Even so light a body as air, when moving rapidly, exerts great force, as we see in a hurricane, and water in the form of hail, when rapidly moving, breaks the glass in our windows, and strips the small branches from trees. On the other hand, a large body, though it moves but slowly, has great momentum, and can strike with great force. A ship, moving so slowly that the motion can hardly be seen, will come against the pier with immense force, and if a small boat should chance to get between the two, it would be made into splinters at once. When a body in motion strikes another, it loses its own momentum, and imparts it to the other; if the second body is movable, it will be set in motion; if not, the effects of the blow will be seen in other ways. Boys in their early attempts with tools, learn some lesson about momentum. If they try to drive a nail into the free end of a board, as in figure 1, they find it very difficult; the force or momentum of the hammer does not send home the nail, but merely gives motion to the board; drive as furiously as you may, the nail will not go to its place. An older person may show you, or you may discover it yourself, that simply holding a block under the end of the board, as in fig. 2, will allow you to drive the nail at once. In this case you strike no heavier blows, use no more force. In the first case, the momentum of the hammer was used up in springing the board; in the second, it is received by the nail and block together, with the effect of driving in the nail.

The Doctor's Correspondence.

PASTE FOR SCRAP-BOOK.

"Sarah M. W.," N. J.—Paste is much better for pasting your materials into a scrap-book than any kind of gum or mucilage. Stir the flour so thoroughly with cold water that there will be no lumps in it, and boil slowly for a few minutes; when cool stir in a few drops of carbolic acid to preserve it. Creasote is said to answer as well.... We have had first and last some very curious examples of insect work, but none that to me seems more wonderful than a bit of stick—a twig of a pear tree that had in it a deep groove three-fourths of the way through, and as nicely cut as if it had been put in a lathe and turned. The gentleman who sent it from Arkansas suspected that it was done by an insect, but he had never been able to catch any at work. He was right in thinking it to be the work of an insect, and for his benefit, as well as to call your attention to it, I give its portrait from Doct. Packard's "Guide to the Study of Insects." The workman, as you see, is a little beetle

CALLED "THE GIRDLER,"

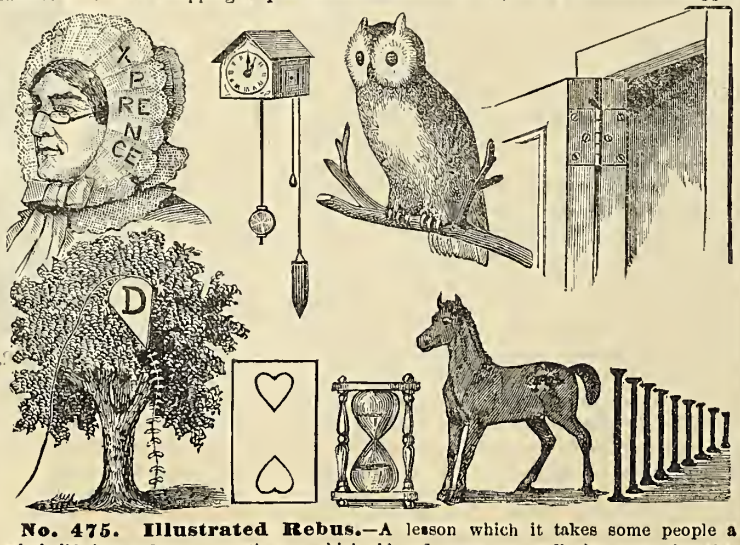
The engraving shows it at work; when the job is finished, the groove is more nicely done than most of you boys could do it with a knife. The insect was first described as long ago as 1825, it being then known to work upon hickory trees; but our Arkansas friend writes that pear trees are most attacked, its next choice is an apple or hickory, and occasionally it attacks the cherry and plum. You do not need to be told that such grooves, however neatly made, are very injurious to a tree; it attacks stems as large as your finger, and of course all that part of the stem above the cut will die. They have not before been known to be abundant, but they seem so in the orchard of the gentleman who sent the specimen.

WHY DOES THE INSECT DO THIS?

Some of you may think it is to get food, but the wood is not eaten; if that were the object, she—for it is always the female insect that does the work—could get wood without the trouble of cutting so deep. She does not do it to get food for herself, but to provide her young with food, which must be dead wood, and very curiously she does it. The mother insect makes holes in the twig in

A GIRDLER AT WORK.

which she places her eggs; afterwards she goes below the place where she has put the eggs and cuts this groove; in time the branch dies, and it being held by a very small neck of wood, the winds break it off, but the young Girdlers are all snug within, where they can feed upon dead wood until they have made their growth; in time they will appear as perfect Girdlers, to go on with the work. When the female insect has laid her eggs, and girdled the twig, she dies; she never lives to see her young, but she works on at her girdling, slowly making the groove, a minute chip at a time. Isn't it wonderful, this foreseeing the wants of her young and providing for them in this strange and peculiar manner!



No. 475. Illustrated Rebus.—A lesson which it takes some people a whole lifetime to learn: a truth over which old and young can well give some thought.

Our Puzzle-Box.

WORD-MAKING PUZZLE.

(In the following lists of words, one word in each list is to have the letter at the end of the list added to it, and with it be transposed into another word.—*Example.* List:—boy, reprobate, ladder, rock, stone, reassure, by; letter, H. The word in the list to which the letter H can be added, is—"stone;" with H, it can be transposed into *honest.*)

1. List: batter, fire, engine, gruel, sense, in, nonsense; letter—U.
2. List: muslin, embroidered, shirt, vest, house, apiece, toy; letter—T.
3. List: dread, Indians, bugbear, onto, mouth, cotton, adapt; letter—M.
4. List: copse, gate, letters, valued, bit, love, future, galley; letter—N.
5. List: history, tale, twice, mine, oyster, knife, incrust; letter—V.
6. List: book, perusal, picture, incur, my, magic, gather; letter—E.
7. List: cow, student, cant, convoke, coo, hexagon, poetry, bond; letter—I.
8. List: open, volume, butcher, veal, suet, hearth, audit; letter—P.

CROSS-WORD.

My first is in awful but not in grand,
My second is in pasture but not in land,
My third is in orange but not in plum,
My fourth is in finger but not in thumb,
My fifth is in chapter but not in verse,
My sixth is in patient but not in nurse,
My seventh is in prison but not in cell,
My eighth is in clapper but not in bell,
My ninth is in poison but not in bane,
My tenth is in torture but not in pain,
My eleventh is in cracker but not in bun,
My twelfth is in pleasure but not in fun:
And now you may look
In your picture-book,
And the first one you see
Is sure to be me.

NUMERICAL ENIGMAS.

I am composed of 16 letters:
My 1, 6, 11, 10, 16, 5, is the name of a river.
My 14, 12, 4, if you eat it will make you shiver.
My 12, 2, 16, 4, 16, is what many like to eat.
My 5, 13, 11, 10, is nothing but a cheat.
My 12, 2, 7, 15, is a part of your face.
My 11, 1, 6, 16, 8, 5, is the name of a place.
My 8, 11, 10, 4, is what you have, so have I.
My 4, 11, 3, 11, 12, 6, 4, often makes infants cry.
My 9, 11, 10, 16, 5, are what a number play.
My 10, 7, 8, 4, is dark and dismal, so they say.
My 10, 11, 14, 8, 4, is the name of a State.
My 9, 11, 1, 4, is where lovers often wait.
My 9, 3, 11, 10, 10, 11, 3, is a useful book.
My 10, 4, 11, 1, is what women often cook.
My 3, 11, 7, 8, is what all nations need.
My 5, 10, 11, 3, 1, is the name of a weed.
My whole is what all farmers need,
Without it they must work indeed. A. B. S.

2. I am composed of 11 letters:
My 7, 1, 4, 9, 11, is a level territory.
My 1, 9, 11, 3, 6, 5, 11, is the name of one of the Presidents.
My 7, 2, 10, 5, is a collection of water.
My 7, 5, 4, 8, is a sketch of a piece of ground.
My whole is a subject much agitated. J. B. K.

ANAGRAMS.

1. A daily W.
2. Emil Uln.
3. Don't hug us.
4. Away! Scat!
5. Rob fed a hen.
6. Nice Lyne.
7. Pet relation.
8. A cane by E.
9. Only a duel.
10. In a strap.

SQUARE WORD.

1. A noted confederate in the late war.
2. To stay.
3. A large violin.
4. A lazy man.
5. Dries.

LITTLE FOLKS.

CONCEALED INSECTS.

1. She had long, natural curls.
2. But wore a high comb, ugly frizzes and puffs.
3. I want to start early to the lecture.
4. Bring rubber shoes and an umbrella.
5. I think of lying down till you return.

PI.

Het laroy barrily fo Pisar sintocan wot limnoli mulsove dan cebjots fo veery notipridesc. Het gruelra naunla ceaserin si wyteut donsuath. Rylane fhal a limnoli sokho ear chenfr thisroy, noly wettyn hutsodan shilgen tosyhir; golytohe meshurn owt dundher tonshand; dan ni encices dan sholohippy heret ear entiny nadushot semulvo. Pretind camtisetsy castagoule ear shunfired.

ANSWERS TO PUZZLES IN THE FEBRUARY NUMBER.

HALF SQUARE.

A P R I L
P L A N
R A T
I N
L

NUMERICAL ENIGMA—BIBLICAL PROVERBS—For wisdom is better than rubies; and all the things that may be desired are not to be compared to it.

CHARADE.—Anthem.

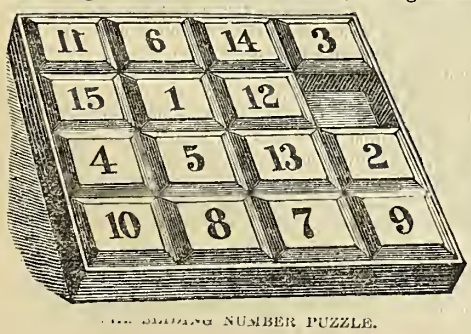
NUMERICAL ENIGMA.—In the voyage of life, Content is the safest pilot.

WHEN	BRED	ABBE
HERO	RODE	BOAR
ERST	EDEN	BARS
NOTE	DENT	ERST

ABBT	COAT	DROP
BEAR	OGRE	ROPE
BASE	AREA	OPEN
TREE	TEAR	PENS

A New Puzzle.

Whoever visited New York in February last must have met at every street corner men and boys doing a thriving business in selling a new game or toy known as: The "Sliding Number Puzzle." This game, which is for a single person, and therefore a *solitaire*, consists, as the engraving shows, of a box into which 16 small square blocks of wood fit quite closely. Upon the upper face of each block is a number, and these run from one to sixteen. When the puzzle is to be worked, one of the blocks is removed (the one having "16" upon it), and the others are placed face down upon the table, and mixed as in the stirring or "shuffling" of dominoes. The blocks being well mixed, are then placed in the box just as they are picked up, beginning at the upper left-hand corner, and filling to the right. When all the 15 blocks are in, there is a single space vacant, and this allows of a sliding of the blocks—one at a time, and of course through only one space. The trick, or puzzle, is to so move the blocks that they will be finally brought into the regular order of the numbers upon them—that is, block "1" is in the upper left-hand corner, "2" next at its right, and so on until "15" is reached at the end. So far as the explanation of the puzzle is concerned it is very simple, but to get the blocks into the regular order is quite another thing. Some persons, after having spent several hours, and even days, have been unable to get them right, while others have succeeded in doing it after a few minutes. Of the latter, it may be said it was all guess work, and the next time they try, it may take them a much longer time. The possible arrangement of blocks as they are placed hap-hazard in the box, are so numerous, that it is safe to say that they can never be twice alike; therefore the movements are different in every succeeding "game." It is interesting to see how much "taken" people have been with this puzzle, bankers and business men have stood in groups at the entrances of their places of business, and exercised their calculating powers over some hard move, or laughed to



THE SLIDING NUMBER PUZZLE.

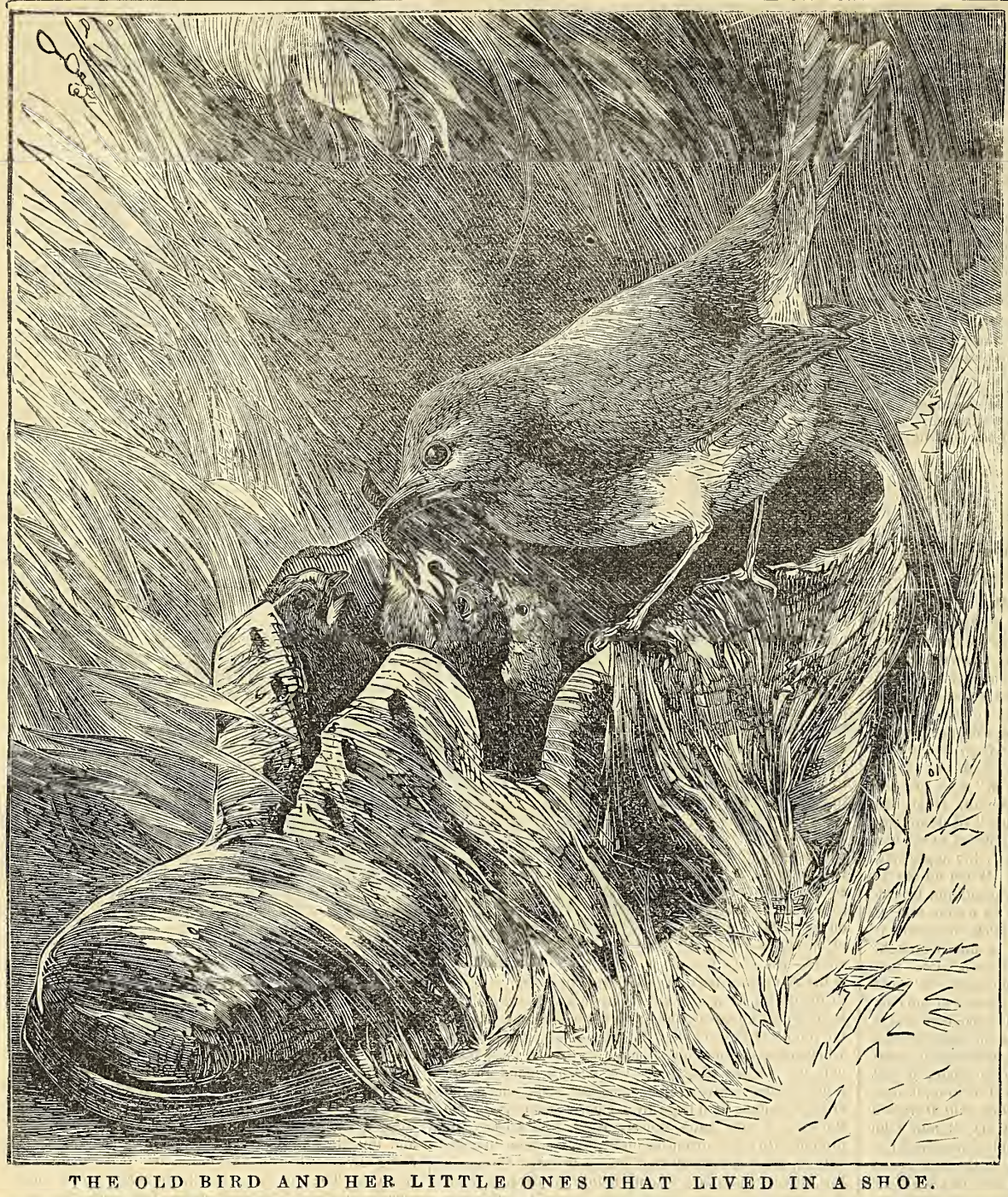
see some one else move and move again, and not make the least particle of progress. The puzzle took with the boys at once, who freely invested their dimes and half dimes—the puzzles being of various sizes, shapes, and prices, to suit the demands of the trade. In our first trial of the puzzle we failed, but in a second attempt, about half an hour of "shoving around" brought all the blocks to their proper places. The boys and girls of the *American Agriculturist* family will be interested in this puzzle, we think, and as we understand it is not patented, any boy can make one for his own and other's amusement; the engraving will show how it is made.

A Bed of Mixed Plants.

Misery is said to make strange bed fellows, but misery has nothing to do with bringing these plants together in the same bed, though they may be "strange," as some of the plants have probably never met each other before. In this respect there is a newness about our bed that may give it interest. There are no paths—no regular ways to go on our round of inspection—and therefore we are at liberty to "go as we please." As the plan of planting is not of the formal style, our ramble may also be irregular, and if the first plant that gains our attention is not in one of the four corners, it will make no difference.

A COLLECTION OF STRANGE LOOKING PLANTS.

No. 1. There is a little low plant that often covers the moist ground along the edges of woods, with its pale-green mottled leaves dotted with purple, and suggesting the tongue of some reptile, and one of the common names of the plant. From between the leaves the slender stalk runs up, and bears on its end a yellow lily-like flower, and of such size and weight as to cause it to hang its head as if in modesty. It generally figures largely in the bouquets which children bring in from the woods in early spring. We have never seen a dog try his teeth on this plant, the color of which is far from violet.—No. 2. This is the representative of a *genus*, or little group of kinds of plants, ten of which are found in the Eastern U. S., some flowering as early as April, while others prefer the hot month of July for showing the regular pretty flowers which are sometimes quite showy because borne in large clusters. A tall kind is very generally found in old flower gardens growing in clusters, the stalks small and straight, ending in a large oval cluster of showy purple flowers. A low kind flowers early, and covers the ground with a mat of mossy pink, also common in cultivation.—No. 3 is a shrub that grows in large clumps in low places, the young shoots being highly prized for whips by boys, and in spring used for making whistles. The flowers are very small, but hang in long soft bunches, which, from their shape and feeling, might remind one of the bushy tail of a squirrel or a cat. The color is yellow, as also is the bark of the twigs, and the bees and other insects are very fond of the flowers, from which they gather much sweet. The plant would be a little out of place in a well kept flower garden.—No. 4. While we are in the low, moist ground, let us notice another and a very different plant, far more attractive from the strange form and coloring of its cluster of flowers than the flavor of its large turnip-like stem below ground. Those who have tasted of this plant seldom like to repeat the experiment. The leaves are usually two in number, and like those of the ordinary clover, composed of three parts, but very much larger. The hood-like richly colored covering to the fleshy flower cluster is very peculiar, and from the arrangement of floral parts the common name is derived.—No. 5 is a particular favorite in spring window gardening; growing from a bulb, and often put in tall and neat glass jars. When in bloom the large flower cluster makes up the principal part of the plant, the individual flowers may be of almost any shades of color, waxy in texture, and extremely fragrant.—No. 6. When children get together in the pasture or along the roadside they are quite sure to pick the bright yellow flowers of number 6 and place them under the chins of their companions to determine the fondness which the one examined has for a certain article of food. The juice of the plant is not agreeable to the taste.—No. 7, the botanists say, is a near relative of the last, though the leaves are of a different shape, and the flowers entirely different in outline, much more showy, each possessing five long tubes, in the bottom of which a little drop of honey is to thus reach the nectar. This is one of the most showy of wild spring flowers, and is fond of growing on some be found—provided some busy bee has not made his early visit and extracted it. Bees are getting very wise, and some of them, instead of taking the trouble to crawl head first into the tube, just punch a hole near the bottom, and rocky cliff just out of reach of those passing below. It is not of a nature to bind itself very closely to a column.—No. 8. A very delicate plant is often found in the woods in early spring, with slender branches and peculiar heart-shaped, scattered flowers. There are two broad spurs to each flower, and as they hang and dangle on their slender supports, they may remind one of a garment hung up as a sign in front of a clothing house in Holland.—No. 9. Again we return to the plants of the lily tribe, and this time to one which frequents rich ground, as along low river banks, where it grows to some five feet in hight. The flowers are small, but make up for their size in number. The stem grows from a creeping one beneath the soil, and as the stem above ground dies at the end of the year it leaves a scar, so that by digging up the stock the age of the plant in years can be determined by counting the scars. The mark or scar resembles the impression made by a stamp. Just why the common name of this plant should be associated with that of a very wise man of old is more than we can tell.—No. 10. Here is a pretty little plant, and one that is so small that we should overlook it were it not for the delicacy and beauty of its very early flowers, coming out so soon as the snows have cleared away from the margins of the woods. Small as it is, it is the welcome friend of every seeker of early gems.—No. 11 is one of the earliest of garden plants to send up its flower to cheer us, and is so near a relative of the Daffodil that we are not sure but they are almost twin sisters.—No. 12. This is not a handsome plant; it grows in damp places, and is quite common. The flowers are rather large, varying in color from white to purple. The mouth of each blossom is nearly closed, and from this, and the size and shape of the flower, it resembles quite strongly the head of some animal.—No. 13 takes its common name from the long, slender, yellow, bitter, fibrous roots which this plant has in great abundance. The leaves are evergreen and shiny. It is a bog plant, with small white flowers, which are not expected out until May.—No. 14. A standard garden plant, with pretty flowers of a characteristic shade, and the name of the plant is the accepted name for the shade of color which the flowers often possess.—No. 15 is not at all attractive, and we put it here as a sort of contrast to the showy plants which are in the bed around it. The common name is derived from the shape of the young pod, which in outline resembles that of the head-dress



THE OLD BIRD AND HER LITTLE ONES THAT LIVED IN A SHOE.

of a high officer in the church.—No. 16. The flower of this is bell-shaped; perhaps it is not wort(h) while to speak further of this.—No. 17. Old neglected cultivated grounds and places in meadows and pastures not occupied with a turf generally abound in this plant, which grows into a bushy herb with a great abundance of small flowers produced through all the season. After the flower comes a pod of small size, the shape of which suggests a part of the name.—No. 18. When a name is so generally applied as to include a number of kinds of plants, it becomes difficult to describe it—but it is safe to say that it is a rough looking plant with a head of flowers on the same plan as the sunflower, only much smaller.—No. 19. The tour among the plants of the flower bed is closed with the notice of the most poetical member of the collection. Though small as a plant, its flowers are large and particularly striking in their appearance, suggesting the human face to those who are at all imaginative. It probably has more common names than any other flower, and one of these implies that it can bring quiet to an important organ of the human body.

Birds and Nest Building.

The first fresh note of the earliest bird, as it comes to one's ears on the still morning air, is full of joy and gladness. After a long and cold winter, anything that tells us that spring is at hand, is very welcome. The spring birds mark a place on the memory of every farmer's child; and if I am not entirely mistaken, the farmer himself is touched and made glad by the sweetness and new life which the returning songsters bring from their Southern winter homes. The Chickadees, Snow-birds, and a few others, remain with us through the winter, and all are thankful for their cheering presence; but it is only when the warm spring days fill the air with the voices of the new comers, that bird life is at its best. The twittering Swallows, the pretty Blue Birds, the sprightly Thrushes, the noisy Bobolinks, and the whole list, bring back the realities of a growing season. After the return, and the general, and generous serenade is over, the active duties of bird house-keeping are uppermost in the minds of the members of the feathered tribe, and in these, and the busy preparations for the same, the greatest charm of bird life consists. In nothing do birds show more tact, skill, forethought, intelligence, and all the other qualities which make them take such a rank, than in the building of their nests, and the rearing of their young. Each kind of bird has its own peculiar way of forming its nest, selecting those materials best adapted to its wants. The Eagle finds some crag, high up out of the reach of its foes, and then in the solitude of the upper air, builds its coarse nest of sticks and moss, and brings forth its well protected young. The little Humming-bird constructs her thimble-like nest, with the greatest nicety, using only the softest of materials; and with a nature very unlike that which we should look for in so small a creature, defends her home with a courage and success, that would put to shame many another two-legged animal, not graced with fine feathers, or fine feelings. The black, unmusical, hated, hunted bird, familiarly known as the Crow, loved by none, shot at by all who can get within its range, poisoned by many, and a great lover of early corn, does not build its nest upon the ground, or within the easy reach of man. The school boy who would rob Crows' nests, can spend much time in climbing large and lofty trees, and must possess a great degree of courage, to insure success. It is better for him to go after school if he goes at all, as he will then be sure of the day's schooling. If boys will confine their nest-robbing, and bird-hunting, to such kinds as the Crow, but very little harm will be done to our birds. To any who will put a cruel hand to the home of the many innocent and useful birds, I would suggest that they receive from their parents that impressive instruction that the meanness of their conduct demands. A bird in a boy's hand, is not worth two that are out of his reach. If children were not so inquisitive—did not have such a strong desire to see and know things—it might be, in some cases, all the more pleasant for the birds. This I know from my own experience. The innocent "ground birds," unsuspectingly find some place at the foot of a bush, or under the edge of a sod, and out of grass, hairs, feathers, thread, wool, cloth, etc., make a nest that the feet of passing cattle, or the hands of evil boys can quickly destroy. The Robin—a bird loved at all seasons, except when the cherries and other small fruits are ripe—builds its nest in a variety of situations. In my boyhood days, it seemed to have a peculiar liking for the corners of old rail fences, and very good places they were in more senses than one. I have watched the whole process of nest-building, from the simple mud foundation, up to the generous, and well-shaped completed home. Then climbing up, with the old bird dashing at my head, saw that there was one egg, then the two, the three, and finally the four—frequent calls being made just to see how everything was getting on. Twelve days later, the little robins broke the thin blue walls of their prison, and the light of a new world came into their inexperienced eyes. I confess to aiding them a little in this transformation scene, and to helping the mother bird feed these great-headed, big-mouthed, piping, hungry, homely, half-covered younglings, while the harassed mother cried (we may suppose) in a loud voice; "These are *my* little ones: torment me no more." I have a weakness for nest building, and no longer ago than last spring, a pair of birds built a nest in a pear tree, but a few feet from one of my windows, and if the truth was told, some one kept well posted on the progress of the work; and for this the owners may have reason to be grateful, as one day a boy was found molesting their quiet reign, and the youth was soon led to see the error of his way—and that to his own home. Luckily the birds and nest were unharmed, and in due time a family was raised. One ambitious fledgling was saved from the "jaws of death" (cat), by human hands, and the wisdom of not leaving home too early in life, was impressed upon the other members of the household. The nest to-day is in the leafless branches of the tree, waiting, it may be, to be refitted in a few days, and occupied by its former owners.

The accompanying engraving shows but one of the many ways in which old things are turned to good account, by the ingenuity of birds. An old shoe has made a most acceptable home for a little feathered family. Having served its day as a cover for some foot, it now becomes a protection to a number of little feet, along with the bodies attached to them. Unlike the old woman who dwelt in the same style of a home, the mother bird, with a goodly brood, seems to know what to do with her children. She may experience more trouble a little later in the season, when they become more independent, and are out from under her wings—When they get out of the shoe, I suppose they step in by the way of the *in-step*; of course, one can not be *shoe-r* of this. UNCLE HAL.

THIRTY-FIFTH ANNUAL REPORT

OF THE

New-York Life Insurance Company,

Office, Nos 346 & 348 Broadway.

JANUARY 1, 1880.

Amount of Net Cash Assets, Jan. 1, 1879, - - - - - $36,213,457.61

Less deduction to cover decrease in value of U. S. Bonds and other assets $135,966.93

$36,077,490.68

REVENUE ACCOUNT.

Premiums	$6,382,875.25	
Less deferred premiums January 1, 1879	379,839.09	—$6,003,036.16
Interest and rents	2,339,875.93	
Less interest accrued January 1, 1879	306,225.93	—$2,033,650.00—$8,036,686.16

$44,114,176.84

DISBURSEMENT ACCOUNT.

Losses by death, including Reversionary additions to same	$1,569,854.22	
Endowments matured and discounted, including Reversionary additions to same	1,015,256.22	
Annuities, dividends and returned premiums on cancelled policies	2,236,379.97	
Taxes and re-insurances	173,608 64	
Commissions, brokerages, agency expenses, and physicians' fees	626,253.30	
Office and law expenses, salaries, advertising, printing, etc	307,392.81	—$5,928,745.16

$38,185,431.68

ASSETS.

Cash in bank, on hand, and in transit (since received)	$ 1,961,701.43	
Invested in United States, New York City, and other stocks, (market value $14,356,192.94)	13,544,671.96	
Real estate	4,974,573.68	
Bonds and mortgages, first lien on real estate (buildings thereon insured for $14,287,000.00, and the policies assigned to the company as additional collateral security)	15,313,278.95	
Temporary loans, (secured by stocks, market value $1,300,000)	850,000.00	
*Loans on existing policies (the reserve held by the company on these policies amounts to $3,160,000)	621,403.02	
*Quarterly and semi-annual premiums on existing policies, due subsequent to Jan. 1, 1880	367,989.02	
*Premiums on existing policies in course of transmission and collection (estimated reserve on these policies $330,000; included in liabilities)	211,625.23	
Agents' balances	22,199.23	
Accrued interest on investments Jan. 1, 1880	317,989.11	$38,185,431.68

**A detailed schedule of these items will accompany the usual annual report filed with the Insurance Department of the State of New York.*

Excess of market value of securities over cost 811,520.98

Cash Assets, Jan. 1, 1880 - - - - - - - - $38,996,952.66

Appropriated as follows:

Adjusted losses, due subsequent to Jan. 1, 1880	$225,662.64
Reported losses, awaiting proof, etc	213,271.31
Matured endowments, due and unpaid	32,780.98
Reserved for re-insurance on existing policies; participating insurance at four per cent Carlisle net premium; non-participating at five per cent Carlisle net premium	34,016,840.32
Reserved for contingent liabilities to Tontine Dividend Fund, over and above a four per cent reserve on existing policies of that class	1,371,482.18
Reserved for premiums paid in advance	16,543.25—$35,876,581.18
Divisible Surplus at four per cent	3,120,371.48

$38,996,952.66

Surplus, estimated by the New York State Standard at 4 1-2 per cent, over.....$7,000,000.00

From the undivided surplus of $3,120,371.48, the Board of Trustees has declared a Reversionary Dividend to participating policies in proportion to their contribution to surplus, available on settlement of next annual premium.

DURING THE YEAR, 5,524 POLICIES HAVE BEEN ISSUED, INSURING $17,098,173.

Number of Polices in force		Amount at risk	
Jan. 1, 1876,	44,661.	1876,	$126,132,119.
Jan. 1, 1877,	45,421.	1877,	127,748,473.
Jan. 1, 1878,	45,605.	1878,	127,901,887.
Jan. 1, 1879,	45,005.	1879,	125,232,144.
Jan. 1, 1880,	45 705.	1880,	127,417,763.

Death-claims paid.		Income from Interest		Divisible surplus at 4 per cent.	
1875,	$1,524,815.	1875,	$1,870,658.	Jan. 1, 1876,	$2,499,654.
1876,	1,547,648.	1876,	1,906,950.	Jan. 1, 1877,	2,626,816.
1877,	1,638,128.	1877,	1,867,457.	Jan. 1, 1878,	2,664,144.
1878,	1,687,676.	1878,	1,948,665.	Jan. 1, 1879,	2,811,436.
1879,	1,569,854.	1879,	2,033,650.	Jan. 1, 1880,	3,120,371.

TRUSTEES:

MORRIS FRANKLIN,	H. B. CLAFLIN,	HENRY BOWERS,	WILLIAM H. BEERS.
WM. H. APPLETON,	JOHN M. FURMAN,	LOOMIS L. WHITE,	CHARLES WRIGHT, M. D.,
WILLIAM BARTON,	DAVID DOWS,	ROBERT B. COLLINS,	EDWARD MARTIN,
WILLIAM A. BOOTH,	GEORGE A. OSGOOD,	S. S. FISHER,	JOHN MAIRS,

EDW. A. WHITTEMORE, HENRY TUCK, M. D., ALEXANDER STUDWELL.

MORRIS FRANKLIN, President.

WILLIAM H. BEERS, Vice-President and Actuary.

THEODORE M. BANTA, Cashier.

D. O'DELL, Superintendent of Agencies.

CHARLES WRIGHT, M. D., } Medical
HENRY TUCK, M. D., } Examiners.

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BAKING POWDER

Absolutely Pure.

Toes Protruding!

Soiled Stockings!

SHOE BILLS DOUBLE IN AMOUNT WHAT THEY NEED BE.

All these ills prevented by purchasing for children's wear either the A.S.T.Co

BEAUTIFUL BLACK or SILVER

TIPPED SHOES.

Improvement for 1880.

THE SAFETY HOT BLAST OIL STOVE.

☞ Does not heat the house. Perfect for all kinds of Cooking and Heating Irons. Always ready and reliable. The most satisfactory Stove made and the Cheapest. ☞ Send for circulars.

The Whitney Manuf'g Co.,
1123 CHESTNUT ST., PHILADELPHIA.

ASK YOUR WATCHMAKER FOR

A KEY THAT WILL WIND ANY WATCH

AND NOT WEAR OUT.

By mail 30c.—**AUTOMATIC** Eye Glass Holder, by mail 25c.—**Birch's Pat. Key Ring,** 10c.—Circulars free.
J. S. BIRCH & CO., 38 Dey St., N. Y.

H.W.JOHNS' ASBESTOS

Liquid Paints.

☞ **ARE STRICTLY FIRST-CLASS PURE LINSEED OIL PAINTS.**

☞ **THE BEST IS THE CHEAPEST.**

These are the purest, finest, richest and most durable paints ever made for structural purpose. They are prepared ready for the brush in sixteen newest shades and standard colors, suitable for the tasteful decoration of dwellings and all classes of buildings, inside and out, and for all purposes where a perfect protective coating is required, and, covering body and durability considered, *they are twenty-five per cent cheaper than the best White Lead or any other kind of paint now in use.*

☞ *Our Asbestos Liquid White has been adopted for interior and exterior work of the U. S. Capitol at Washington.* ☜

☞ *The Metropolitan Elevated R. R., of New York City, is painted with our paints.* ☜

ASBESTOS ROOF PAINT.—Brown, Red, Yellow, Gray, Slate, and Cream, for tin and shingle roofs, iron work, agricultural implements, fences, out-buildings, etc. *We guarantee this to be a better article than has ever before been offered to the public for similar purposes.*

Samples of Colors and Descriptive Price-Lists by Mail.

H. W. JOHNS' M'F'G CO., 87 Maiden Lane, N.Y.

Manufacturers of **Asbestos Roofing, Boiler Covering, Steam Packing, Sheathing, Cements, Coatings,** etc.

IF YOU HAVE A GARDEN, YOU NEED

ESTABLISHED 1845.

150 pages. Over 300 Illustrations, and a Beautifully Colored Plate of Pansies. Mailed for 10 cents.

BLISS' ILLUSTRATED AMATEUR'S GUIDE TO THE FLOWER AND KITCHEN GARDEN contains more practical information on gardening than many high-priced books. Our list comprises 2,000 varieties Flower Seeds, 1,000 varieties Bulbs and Plants, 500 varieties Vegetable Seeds, 500 varieties Potatoes, etc. 220 pages, over 600 illustrations, 2 double-page colored plates of flowers. Price: paper covers, 35 cents; bound in muslin, $1.00.

Illustrated Catalogue of **Fruit and Ornamental Trees, New and Rare Plants, and Small Fruits,** mailed free to all applicants.

PRINGLE'S NEW
Hybrid Spring Wheats,
Champlain and Defiance,
Two of the Best and Most Productive Varieties on Record.

791 lbs. CHAMPLAIN, 528 lbs. DEFIANCE,
GROWN FROM A SINGLE POUND OF SEED.

128 Bushels to the Acre. Heads from five to seven inches long, producing from seventy-five to one hundred kernels per head.

50 to 75 Strong Stalks from a Single Grain.

Descriptive Illustrated Circular mailed free to all applicants. Price of each variety, per lb., 40 cents, 3 lbs. for $1, by mail. By express, freight paid by purchaser, $2 per peck; $7 per bushel. 2 bushel bags of either variety, $13.

PEARL MILLET.

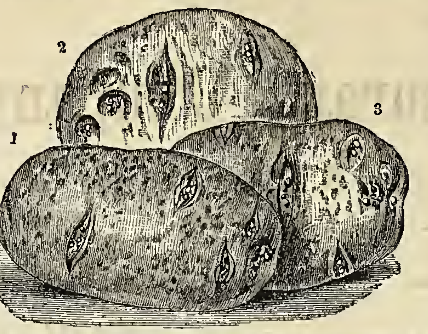
Clean Seed, 10 cents oz., 25 cts. ¼ lb., 60 cts. lb.: 4 lbs. $2.25, by mail, post-paid; by express at expense of purchaser, 40 cts. per lb. Prices to the trade will be given on application.

Collections of Flower Seeds and Bulbs,
BY MAIL, POST-PAID.

Collection A—Contains twenty choice varieties of Annuals.......... $1 00
Collection B—Contains twenty choice varieties of Biennials and Perennials.......... 1 00
Collection C—Contains ten extra fine varieties of Annuals and Perennials, embracing many of the new and choicest in cultivation.......... 1 00
Collection D—Contains five very choice varieties selected from Prize Flowers of English Pansies, German, Carnation and Picotee Pinks, Verbenas, Truffaut's French Asters, Double Hollyhocks.......... 1 00

Any one remitting $3.00 will receive the four collections, postage free.

Three New Potatoes.



1. Pride of America.—In appearance resembles the Snowflake, a few days later; very productive, large size, an excellent keeper; of superior quality.

2. Matchless.—Tubers very handsome, round; pale-red; flesh fine grained, pure white, and of excellent quality. A great cropper, an excellent keeper.

3. Silver Skin.—A cross between the Early Rose and White Peach Blow. Tubers medium to large. Skin smooth, silvery white, russeted. Flesh snowy white, fine grain, splendid quality, an excellent keeper.

Prices of each of the above, $1.00 per lb., 3 lbs. $2.50, by mail, prepaid. By freight or express at purchaser's expense, ½ Peck, $3.00; 1 Peck, $5.00; ½ Bushel, $7.00; Bushel, $12.00; Barrel, $25.00.

All the older standard varieties at market prices.

Bliss' Illustrated Potato Catalogue, contains a descriptive list of all the new varieties recently introduced, with many other desirable sorts, beautifully illustrated. Centennial collection of 500 varieties. Also much useful information upon the cultivation of this valuable esculent. 10c.

RELIABLE ONION SEEDS.

Our stock of Onion Seed has been raised from selected bulbs, and carefully tested, and we can recommend it with the greatest confidence, as equal to any ever offered in this or any other market.

	oz.	*¼ lb.*	*lb.*
Extra Early Red..........	$0.35	1.10	3.50
Early Red..........	30	1.00	3.00
Wethersfield Large Red..........	25	75	2.00
Danvers Yellow..........	40	1.25	4.00
Yellow Dutch..........	30	1.00	2.50
White Portugal..........	30	1.00	2.75
Early Cracker..........	40	1.25	4.00
Early Red Globe..........	40	1.25	4.00
Southport Red Globe..........	35	1.10	3.50
Southport White Globe..........	35	1.10	3.50

In lots of 5 lbs. and over, 50 cents per lb. may be deducted

Postage must be added at the rate of 16 cents per pound when ordered by mail.

Prickly Comfrey Roots.

25 cts. ¼ lb., 75 cts. lb., by mail, post-paid, by express 50 cts. lb., 5 lbs. $2. Directions for cultivation accompanying each lot.

B. K. BLISS & SONS, **34 Barclay St., N. Y. City. P. O. Box 4129.**

NEW POTATO,
"ST. PATRICK."

In appearance the St. Patrick is undoubtedly one of the handsomest Potatoes ever grown; it has a smooth white skin, and white flesh, few and shallow eyes; in shape it is rather oblong than round, and has no core or hollow; it is also a strong and hardy grower, and, from all accounts, has withstood the rot so prevalent last season better than any other sort. It produces but few small tubers, ripens medium early, and, finally, it is enormously productive and of fine quality.

At the Fall Exhibition of the New York Horticultural Society, held in this city, September, 1879, the St. Patrick shown by us was awarded the First Premium over all other Seedling Potatoes exhibited.

Price 50 cts. per lb., by Mail.
Or by Express or Freight, $2.50 per peck; $8.00 per bushel; $20.00 per bbl.

We also offer selected stocks of the following leading Seeds:

		¼ lb.	1 lb.
Beet.	—Early Blood Turnip..........	$0.10	$0.35
"	—Dark Red Egyptian..........	0.20	0.75
Onion.	—Early Flat Red..........	0.75	2.75
"	—Wethersfield Red..........	0.60	2.00
"	—Yellow Danvers..........	1.00	3.50
"	—Yellow Dutch..........	0.90	3.25
Radish.	—Round Dark Red..........	0 25	0.75
Spinach	—New Savoy Leaved..........	0.15	0 40

If by mail, postage must be added at the rate of 16c. per lb.

Catalogue for 1880, free on application.

PETER HENDERSON & CO.
35 Cortlandt St., New York.

New Seed Warehouse.

THE FIRST TO INTRODUCE EUROPEAN PRICES,

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DESIRABLE NOVELTIES.

Early Washington Tomato.—A very handsome variety, of perfect form, smooth as an egg, and rich, deep-red color. Fully a week earlier than "Acme," as solid as "Trophy," and decidedly superior in flavor. Per packet, 15 cts.

Carrara Rock Cauliflower.—The earliest variety known; produces beautiful, compact, snow-white heads of the finest quality. Resisting heat and drought, it will head where other varieties fail. Per packet, 50 cents; half oz., $6.00; oz., $10.00.

Coral Flesh Musk-Melon.—*(From Japan.)* A very early, densely netted variety, of round form and medium size. The rind is remarkably thin, while the suffused coral flesh is thick, deliciously crisp and melting. Per packet, 25 cents.

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GARDEN CALENDAR
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136 PAGES BEAUTIFULLY ILLUSTRATED.

The best work on GARDENING. It contains descriptive price lists of **VEGETABLE** and **FLOWER SEEDS** and **CHOICE PLANTS,** with **every thing** for the **Garden.** Copy, with large **Chromo** of **New COLEUS, 10** cts.; plain copy, **6** cts. for postage. **Wholesale list** for **Florists** and **Market Gardeners free.**

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OUR NEW BOX FOR 1880 contains *Variegated Lima Bean, Mammoth Tours Pumpkin, New Excelsior Watermelon, Prize Paragon Tomato, Green Prolific Cucumber, Sutton's Student Parsnip, Yellow Ovoid Mangel, Nimble Six Weeks' Turnip, Large Viroflay Spinach* and an improved *New Radish.* The whole 10 pkts., at retail, *are* **worth $1.00,** but will be sent, post-paid, in a neat box, for **only 25 cts. Burpee's Seeds are popular wherever grown,** and this great special offer is made to introduce them to thousands of new customers. **Burpee's Flower Seeds** are finest in quality and lowest in price. *Your choice of all varieties* at 5 CTS. PER PKT.; 25 PKTS. FOR $1.00. Our popular collections of **10 Pkts. for 25 cts.; 20** Varieties **for 50 cts. FOR ONE DOLLAR** we will send, post-paid, **40 Pkts.** of Garden, Field and Flower Seeds. Full directions for culture printed on each packet of the above. Postage Stamps taken. **Order now. Burpee's Farm Annual for 1880,** enlarged and fully illustrated, telling all about Seeds, Plants, Small Fruits; Blooded Live-Stock, Fancy Poultry, Dogs, &c., sent free to any address.

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RAFFIA FIBRE.

A NEW BAST.

Superior every way to all other known articles for binding up **PLANTS** and similar purposes.—Specially distinguished for its **Lightness, Pliability,** and **Durability,** its **Freedom** from **Rot,** and **Great Divisibility** into the **smallest fibres.**

Can be used **WET** or **DRY.**

It is by far the most economical tying Bast, and now in great demand in Europe.

Orders received, and small samples with prices furnished by Mr. THEODORE SCHUSTER,
419 Herkimer Street, Brooklyn, N. Y.
J. W. WUNDERLICH,
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FRESH, PURE SEED

Our New England-grown Seeds have secured an enviable reputation, and we again invite the attention of **Farmers, Gardeners, Florists,** and others to our new and select stock of every variety, which we offer at low prices. Our **Boston Market Vegetable Seeds** have a special reputation for excellence, and our stock of **Flower Seeds** is unsurpassed in all the choicest varieties. Seeds sent by mail to all parts of the country, and guaranteed to reach purchasers. New Catalogue for 1880 sent free.

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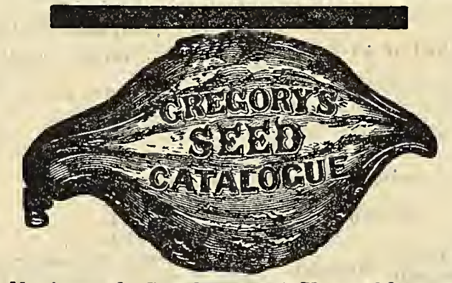


My Annual Catalogue of Vegetable and Flower Seed for 1880 will be ready by January, and sent **free** to all who apply. I would invite attention to the superior character of the vegetable engravings, most of which were made from photographs of vegetables grown on my seed farms. I offer one of the largest collections of vegetable seed ever sent out by any seed-house in America, a large portion of which were grown on my six seed farms. All seed sold from my establishment warranted to be both fresh and true to name; so far that should it prove otherwise, I will refill the order gratis. As the original introducer of the Hubbard and Marblehead Squashes, the Marblehead Cabbages, and a score of other new vegetables, **I invite the patronage of all who are anxious to have their seed directly from the grower fresh, true, and of the very best strain. NEW VEGETABLES A SPECIALTY.**

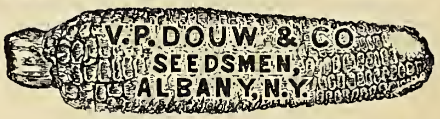
JAMES J. H. GREGORY, Marblehead, Mass.

WHITE WATER LILY.—Strong roots of this fragrant Lily, with printed directions for planting in tubs and ponds, 25 cts. each, $2 per doz., by mail. MANN BROS., Randolph, Mass. P. O. Box 162.

THE ALBANY SEED STORE.

ESTABLISHED 1831.
49th YEAR.

PRICE & KNICKERBOCKER, Successors to



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SMALL FRUITS,

MAILED FREE. 80 PAGES—450 ILLUSTRATIONS.
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A beautiful work of **100 Pages, One Colored Flower Plate, and 500 Illustrations,** with Descriptions of the best Flowers and Vegetables, and how to grow them. All for a Five Cent Stamp. In English or German.

VICK'S SEEDS are the best in the world. Five Cents for postage will buy the Floral Guide, telling how to get them.

The **Flower and Vegetable Garden,** 175 Pages, six Colored Plates, and many hundred Engravings. For 50 cents in paper covers; $1.00 in elegant cloth. In German or English. Address

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SEEDS

Our large Illustrated Catalogue of everything for the Farm or Garden mailed **Free to All.** It costs nothing and may save you a great deal.

Send for it.

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THE PHILADELPHIA BROAD-CAST SEED-SOWER,

for Sowing all Varieties of Grain and Grass Seeds, also Fertilizers.

No. 1 Machine, price $30, averages 12 to 15 acres per hour. No. 2 Machine, price $6 (see cut), from 4 to 6. At the same time sowing better and far more evenly than by *hand or any other* method. Send for circular.

Agents wanted in every county.

Benson, Maule & Co.,

Manufacturers, **223 Church St., Philadelphia, Pa.**

New Forage Plants.

PEARL MILLET.

Clean seed free from the chaff. Price 25c. per lb., by mail, prepaid, 45c. Per peck (12½ pounds), $2.75. Per bushel (50 pounds), $10.00. Special price to the trade on application

WHITE EGYPTIAN CORN

(Sorghum vulgare)

An excellent forage plant, and largely grown in California for the grain, which is used as a valuable article of food both in the green and ripe state. Per pkt. 10c.; per lb. 65c., by mail, prepaid.

TEOSINTE *(Euchlæana luxurians).*

This gigantic grass was illustrated and described in the Jan. No. of the *Agriculturist.* Per pkt. 25c. 5 pkts. $1.00.

PRICKLY COMFREY.

Roots of this most luxuriant forage plant. Price 50c. per pound, by mail, prepaid.

My choice Vegetable, Flower, and Farm Seeds are sent to every part of the United States, and give invariable satisfaction. Descriptive Catalogues of Seeds and Garden Implements, New and Beautiful Plants, Small Fruits and Fertilizers, sent free on request.

WM. H. CARSON,

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WE HAVE NEVER BEFORE

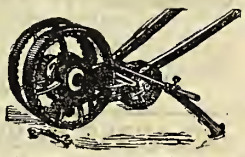
made such a variety of Garden Seed Sowers, Wheel Hoes, &c.

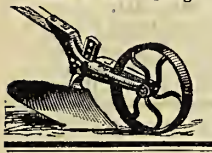
WE HAVE NEVER BEFORE

offered Tools so well made, beautifully finished, and perfect in practice.

WE HAVE NEVER BEFORE

combined so well, variety of work with ease of operation. These machines quickly save first cost. They are prominent *Agriculturist* **Premiums,** and JAS. VICK says he has never sold any so popular. Correspondence is solicited, and Descriptive Catalogues with engravings are sent FREE.





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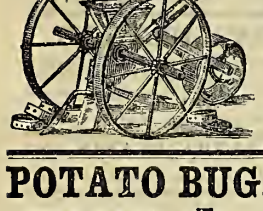

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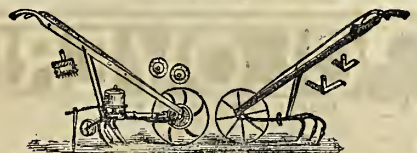

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SKED, PADDOCK & CO., **Cleveland, O.**

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from Page 133.

In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations are seldom repeated, as those who desire information on a particular subject can cheaply obtain one or more of the back numbers containing what is wanted.

Back numbers of the "American Agriculturist," containing articles referred to in the "Basket" or elsewhere, can always be supplied and sent post-paid for 15 cts. each, or $1.50 per volume.

The German Edition.—All the principal articles and engravings that appear in the *American Agriculturist* are reproduced in the German Edition. Besides these, there is a special department, edited by an eminent German cultivator. Our friends can do us a good service by calling the attention of their German neighbors and friends to the fact that they can have the paper in their own language, and those who employ Germans will find this Journal a most useful and acceptable present.

Bound Copies of volume 38, and of every previous volume back to Vol. XVI. (1857), neatly bound, with gilt backs, Index, etc., are supplied at $2 each (or $2.30 if to be sent by mail). See Publishers' Notes, 2d cover page.

Clubs can at any time be increased by remitting for each addition, the price paid by the original members; or a small club may be made a larger one at reduced rates, thus: One having sent 6 subscribers and $7, may afterwards send 4 names more and $3, making 10 subscribers for $10.00: and so for the various other club rates.

Terms to New South Wales, New Zealand, Australia, Africa, etc.—To several inquirers. Under the latest revision of the Postal Union Regulations the price of the *American Agriculturist* (either English or German edition), including postage *prepaid* through, will be covered by 7 shillings sterling per annum. This applies to the above countries, and to all others embraced in the General Postal Union. The simplest mode of remittance is by Postal Money Orders, payable in London, to the order of Orange Judd Company. These can be readily cashed in N. Y. City at a slight discount, which the publishers will cheerfully pay. For Club rates, (postage included), see our second cover page, and reckon 22 cents to the shilling sterling.

Some Fish Hooks.—It is reported that a single factory at New Haven, Conn., made 23,000,000 fish hooks during last year. If these averaged 1½ inch each, and were laid down end to end, they would extend 544 miles, or about from Washington to Boston. If only an inch long, they would extend 363 miles, or just the length of the Erie Canal from Albany to Buffalo.

The Western National Fair Association.—The first show bill announcement for a fair for the coming autumn, is from the enterprising State of Kansas. It is of a new organization with the title of "The Western National Fair Association," and is to hold its first exhibition at Bismark Grove, near Lawrence, Sept. 13–18. Over $30,000 in premiums are offered, and the largest agricultural and industrial display ever made beyond the Mississippi is anticipated.

Old Fruit Cans.—If we should bring together and present in one article, all the various devices for utilizing old fruit cans, that we have published in the last 20 years, it would be a curious array. Every now and then a new method is added to make these cast off affairs of service. The latest comes from Baltimore. A friend there draws upon them for a supply of tin. By heating sufficiently to melt the solder, the tops and bottoms come off, the joint at the side opens, and the pieces that formed the body of the can are flattened out, and kept in stock. Is a patch needed under a shingle, does a knot hole or a rat ditto need to be stopped; does the horse gnaw the wood-work of the stable? A piece of tin is the remedy.

"Spring Poor."—No animal should be permitted to fall off in flesh during the winter from lack of food and care. Especially important is it that the horses—upon which the spring work falls so heavily—should be in good trim when the spring opens; in good flesh, good health, and of course, as a consequence, in good spirits.

Catalogues Received.

Catalogues are many—space is narrow. Our friends must be content with the briefest acknowledgement.

SEEDSMEN.

R. H. ALLEN & Co., 189 and 191 Water Street, N. Y. Neat and full. Grass and Farm Seeds a specialty.

J. H. ANDRE, Bingham's, Tioga Co., N. Y. A special Potato catalogue.

A. BECK, Oregon, Ill. A new Radish as a specialty.

WM. E. BOWDITCH, 645 Warren Street, Boston, Mass. Fully illustrated. Numerous novelties.

HENRY A. DREER, 714 Chestnut Street, Phila. Full, with a long list of novelties.

J. A. EVERITT, Watsontown, Northumberland Co., Pa. General Seed list, with several new Potatoes.

WM. L. FERRIS, JR., Ponghkeepsie, N. Y., offer seeds, with the *American Agriculturist* as a premium.

JOSEPH HARRIS, Moreton Farm, Rochester, N. Y. A select list of Farm, Garden, and Flower Seeds.

R. D. HAWLEY, Hartford, Conn. Vegetable and Farm Seeds and Implements.

HOVEY & Co., 16 South Market Street, Boston, Mass. One of our oldest houses, but wide awake for all novelties.

F. E. MCALLISTER, 29 Fulton Street, N. Y., sends his wholesale trade catalogue in English and German.

A. C. NELLIS, Canajoharie, N. Y., makes of his catalogne a "Floral Instructor," and very full it is.

PRICE & KNICKERBOCKER, 80 State Street, Albany, N. Y. "Surprise" Musk-melon, with other specialties.

W. W. RATHBONE, Marietta, O. Special list of Sweet and other Potatoes.

W. H. REID, Rochester, N. Y., calls his handsomely illustrated catalogue, "A Key to Success in the Garden."

H. N. SMITH, Sudbury, Mass. A select list.

JAMES VICK, Rochester, N. Y. While his catalogue is called a "Floral Guide," it does not omit Vegetables, and is full of pictures.

NURSERYMEN.

BRIGGS ARNOLD, Rockland, Mass. Grapes, especially the "Roekland Favorite."

A. T. BLAUVELT & Co., Blauveltville, Rockland Co., N. Y. General Fruit and Ornamental Stock.

BUSH & SON & MEISSNER, Bushberg, Jefferson Co., Mo. Grape-vines, full and admirably condensed.

M. CRAWFORD, Cuyahoga Falls, Ohio. Strawberry list, with treatise on culture.

ELLWANGER & BARRY, Rochester, N. Y. A general descriptive Fruit catalogue, with illustrations of novelties and a special strawberry list with cultural directions.

W. L. FERRIS, JR., Ponghkeepsie, N. Y. General Fruit stock and several new Grapes.

FRANK FORD, Ravenna, Ohio. Small Fruits; new Apple.

A. HANCE & SON, Red Bank, N. J. Trade Price List and surplus stock at very low rates.

DAVID HILL, Dundee, Kane Co., Ill. Evergreens and Ornamental Tree Seedlings.

D. E. HOXIE, Northampton, Mass. Small Fruits; all kinds.

THOS. JACKSON, Portland, Me. General Fruit list and ornamental stock, especially Evergreens.

KELSEY & Co., Saint Joseph, Mo., sends wholesale price list of a full stock.

SAM'L KINSEY, Kinsey's Station (Near Dayton), Ohio. Wholesale list of Fruit and Ornamental Trees.

WILLIAM H. MOON, Morrisville, Pa., sends a general catalogue and a special Strawberry list.

JOHN C. NELTOE, Turner Junction, Ill., has several neat, condensed lists of Strawberries, Small Fruits, etc.

PARSONS & SONS Co., Flushing (L. I.), N. Y. General catalogue and special list of New and Rare Plants.

CHAS. S. PRATT, North Reading, Mass. Descriptive list of Strawberry Plants.

SHEARMAN & MAJOR, Bricksburg, N. J. General assortment; Peaches and Strawberries as specialties.

STORRS, HARRISON & Co., Painesville, Ohio. A general illustrated and an abridged list of an immense variety.

THOS. J. WARD, St. Mary's, Ind. Evergreens, Small Fruits, etc.

FLORISTS.

C. E. ALLEN, Brattleboro, Vt. Has a combined Plant and Seed catalogue, with novelties in both.

PAUL BUTZ & SONS, New Castle, Pa. Wholesale and retail lists of a large collection of "New, Rare, and Beautiful Plants.

DINGEE & CONARD Co., West Grove, Pa. Make a specialty of Roses, and give a new guide to their culture.

HENRY A. DREER, 714 Chestnut St., Philadelphia. A full Greenhouse stock. Many novelties, especially in Coleus.

ELLWANGER & BARRY, Rochester, N. Y. A descriptive catalogue of Greenhouse and other Plants, and a special Rose catalogue.

GREENBROOK & PATERSON NURSERIES, Patersou, N. J. Supplement to general catalogue, and rich in Orchids, etc.

ROBERT J. HALLIDAY, Baltimore, Md. Very full illustrated list, with many novelties.

W. A. HARKNET, Dubuque, Iowa. New Seedling Geraniums and general assortment.

CHAS. T. STARR, Avondale, Pa. Makes a specialty of Carnations, but has everything else.

STORRS, HARRISON & Co., Painesville, Ohio. Their Plant catalogue is as full as that of Nursery stock, with many new things. Also a special list of dollar Collections.

JOHN STEPHENS, Circleville, Ohio, sends a full and complete catalogue (for a beginner) of Greenhouse and Bedding Plants.

J. M. THORBURN & Co., No. 15 John Street, N. Y. Special catalogue of Gladiolus and other spring Bulbs.

WOOLSON & Co., Passaic, N. J. Hardy Perennials in great variety, also Native Plants, including Ferns, etc.

WM. C. WILSON, 45 West 14th Street, N. Y. A Seed catalogue is added to the immense list of Plants, which, as usual, has many novelties.

DEXTER SNOW, Chicopee, Mass. General catalogue of a fine selection of Greenhouse and Bedding Plants.

EUROPEAN CATALOGUES.

WM. THOMPSON, Ipswich, Eng. Flower Seeds only, and one of the rarest collections in England.

H. CONNEL, Swanley Junction, Kent, Eng. A "Floral Guide," a volume of over 250 pages and illustrated.

MACHINERY AND MISCELLANEOUS.

WM. M. BELL, Smyrna, Del. Drain Tiles, with reasons why they should be laid, and directions for laying them.

BROCKNER & EVANS, 492 West Street, N. Y. Galvanized Wire Nettings.

GRAHAM, EMLEN & PASSMORE, Philadelphia. Philadelphia Lawn Mowers and Lawn Sweepers.

HAWORTH & SONS, Decatur, Ill. Haworth's Check Rowers.

N. P. MIX, Avenue, Franklin Co., Ohio. Continues to make the "Old Reliable Banner Wind-mill." Also Improved Sowers for Grass, etc.

TIMOTHY B. HUSSEY, North Berwick, Me. Plows, Cultivators, Harrows, etc.

RUSSELL & Co., Masillon, Ohio. The Masillon Thresher, Farm Engines, and Horse Powers, finely illustrated.

GEO. L. SQUIER & BRO., Buffalo, N. Y. Plantation Machinery for Coffee, Rice, Sugar, and Corn Machines, with Horse, Water, and Steam Powers for driving them. A most interesting and instructive work.

A. W. WELLS & Co., St. Joseph, Mich. Baskets and other Fruit Packages in great variety.

R. & J. BECK, Philadelphia, Pa. This celebrated London firm of microscope makers, bas a branch at 1016 Chestnut Street.

LIVE STOCK., INCLUDING POULTRY.

WM. CROZIER, Northport, Suffolk Co., N. Y. Ayrshire, Jersey, and Guernsey Cattle.

The following send Poultry lists: G. D. ELMES, Waterport, N. Y.; M. B. ROWE, Fredricksburg, Va.; T. J. WARD, St. Mary's, Ind....A. M. HALSTED, Rye, N. Y., Centennial Incubators and Brooders.

DAIRY APPLIANCES.

CORNISH & CURTIS, Fort Atkinson, Wis.—Rectangular Churn and Lever Butter Worker.

MOSELEY & STODDARD, Poultney, Vt. Moseley's Cabinet Creamery.

C. H. R. TRIEBELS, Philadelphia, Pa. The Lilly Butter Worker.

DEALERS IN FERTILIZERS.

BOWKER FERTILIZER Co., Boston, New York, and Rochester. The Stockbridge and other manures, with directions for their use.

H. B. GRIFFIN, No. 70 Cortlandt Street, N. Y. Peruvian Guano, Phosphates, and Fertilizers generally.

MANHATTAN FERTILIZER Co., 38 Platt Street, N. Y. Blood Guano, Ground Bone, and Chemicals.

MAPES' FORMULA AND PERUVIAN GUANO Co., 158 Front Street. Mapes' Complete Manures, Peruvian Guano, etc.

A. H. WARD, Bridgewater, Mass. Agricultural Chemicals and Special Fertilizers.

The Mapes Complete Manures.—Those interested in the question of fertilizers, will find this pamphlet instructive reading. In the Reports of the *American Agriculturist* Fertilizer Experiments, the number of crops to which chemical fertilizers were applied, is limited, while the pamphlet in question gives the result of their application to almost every crop grown in our climate. The results with Cauliflower, Onions, and other "truck" crops, show that stable-manure is not the only fertilizer that can be profitably used upon them. There is no secrecy about the composition of these fertilizers; if there were, we should say nothing about them.

Life Insurance A Duty.—Every man has or ought to have some care or pecuniary responsibility for others resting upon him—for wife, or children, or friends, or for some public enterprise. And no man can drop off suddenly by death, as every one is surely liable to do, without danger that his family, or perhaps his creditors would be embarrassed, unless he be one of the few who have ample supplies of registered government bonds to more than offset all possible contingencies of fire and flood, of financial panics, or the failure of others. Wide extended observation and carefully prepared statistics show with almost absolute certainty how many persons out of every ten thousand will die annually. It is a very easy matter, therefore, for a company of persons to unite, and by mutual contribution to a common fund provide for the bestowal of a given sum to the family or creditors of each one who shall drop out by death during any year. Take the figures on page 155 in illustration. We there find 45,715 persons contributing an average of $140 a year, which, with the interest from the already accumulated great fund of nearly 40 million dollars, is sufficient to secure to each person who dies an average of $3,000, and except in very rare years of extraordinary mortality, there is a large surplus to be divided among the contributors, or to be deducted from their next year's payments. A man of 30, having a wife or children, or aged relatives, or creditors depending on him, can have in store for them $1,000 for each $22.00 he annually contributes to the general fund, less his share of the dividends. The fact that he has this provision made will often be a strong help to his recovery from illness, by lessening his anxiety and worry about those he may leave behind him. Those not already fully insured should write to one or more of the large and well managed Companies like the N. Y. Life, whose Reports appear from time to time in our columns, and get and study their tables, explanations, etc., which are furnished gratuitously to those desiring them.

London Purple.—If we mistake not, the *American Agriculturist* was the first to call attention to London Purple, as a substitute for Paris Green, as an insecticide. Last season's experience of a large number of prominent cultivators, is now made known, and more than sustains all that was claimed for it, not only in destroying the "Potato Bug," but in depriving the Canker Worm of its power of destruction. The testimony of Prof. Riley as to its power of destroying the Cotton Worm, is most important; during his investigations in the cotton-fields last summer, London Purple was thoroughly tested in Georgia, Alabama, and Texas, and was found to kill the Cotton Worms, without injury to the plant. Prof. R. advises using it with water, mixing half a pound with 50 to 55 gallons of water. Being a "by product," that is obtained incidentally in the process of making Analine dyes, it can be sold more cheaply than Paris Green, which must be manufactured directly. There is no temptation to adulterate the Purple, while the Paris Green, as ordinarily sold in country stores, is rarely pure. It should be remembered that the Purple being a compound of Arsenic, is equally poisonous, and is to be preserved and used with all the care advised for Paris Green.

"New and Rare Plants."—The Parsons Sons Co., Flushing, (L. I.) N. Y., issue a special catalogue with this title, and the contents certainly warrant it. We doubt if any establishment in Europe can show such a list of rare Japanese and other trees, shrubs, climbers, etc., both evergreen, and deciduous; several Horse Chestnuts, Maples, Oaks, Hydrangeas, Ashes, Magnolias, and others, quite new to cultivation, help make up a catalogue full of interest to every lover of choice plants.

Tying Material—Raffia.—For a long time Bass or Bast bark, was the universal tying material with gardeners and nurserymen. Large quantities of this are imported in the form of Russia or Archangel mats, which are used for packing furniture or similar articles, and are pulled apart by gardeners and others for the strands of which they are woven. Several years ago war shut off the importations of mats, and our nurserymen learned that they could prepare a better material from our native Linden or Bass-wood Tree. Cuba Bass, the inner bark of a tree of the Mallow Family, was introduced into England and to this country as a substitute for the Russian, and while it is very strong, it lacks the pliancy needed for most purposes. Lately there has been introduced from the East Indies, a material that appears to have all the good qualities of Bass without the faults of its substitutes. This is offered in our advertising columns as "Raffia," or "Raffia Fibre." It is in lengths of about 5 feet, and is about half an inch wide, but tapering gradually at one end. We take this to be derived from the stem of a species of *Cyperus* closely related to the Papyrus plant, and the same material as that from which the much esteemed India mats are made. The Raffia splits into the smallest fibres; it unites great strength with a silky softness and pliability, and for budding seems to be a most perfect tying material. How it will work in the rapid wholesale operations of the professional peach-budders, can only be told by experience.

Dentaphone and Audiphone, are names of new devices for utilizing the well-known fact that the bones, etc., of the head, can convey vibrations to the auditory nerve, and produce the sense of hearing. To many totally deaf persons these affairs are a new revelation, while those partially deaf often find great assistance from them. But those persons, in whom essential portions of the ear have been destroyed, or in whom they have been lacking from birth, are beyond the aid of these or any other appliances whatever.

The American Veterinary College.—The commencement of this excellent institution was held on February 27th last, in the presence of an audience noted for the large number of prominent scientists, merchants, and others. The graduates were 18, and represented six different States, with one from Bermuda. The customary addresses were made and prizes distributed. The occasion must have been a gratifying one to the officers and faculty of the College, and especially so to Dr. A. Liautard, its President, whose efforts in behalf of veterinary science, continued in spite of all obstacles, are now meeting deserved success. Young men who contemplate entering the medical profession will do well to consider if Veterinary Surgery does not present quite as useful a career as any other, and one more likely to be profitable.

"The Botanical Gazette." — This journal commenced its 5th volume with the present year. From small beginnings it has gone on improving and is now just such a medium as working botanists need for communicating with one another and with the world in general. The Messrs. Coulter deserve much credit for their efforts, and all botanists should aid them in what always must be a labor of love, by sending the price of subscription ($1) to J. M. Coulter, Crawfordsville, Ind.

Michigan Pomological Society.—The Report of the Secretary of this flourishing Society for 1879 comes to us full of valuable information; and especially rich in its "Portfolio" items, which the Secretary, Mr. C. W. Garfield, has selected with great care. Michigan is a good fruit State, and its Pomological Society is doing good work, as shown by the high character of its reports.

Butter Coloring is so generally used in winter, that it becomes a matter of importance to have one that, while it gives a satisfactory color, shall be free from all unpleasant odor and taste, and especially from anything unwholesome. Abundant testimony is given that the Perfected Butter Color of Wells, Richardson & Co. meets these requirements, not only by American dairymen, but in England and other parts of Europe it has met with great success and approbation.

The Robbins Family Washer.—We gave last year our opinion in full as to this Washer and the principle upon which it works, which could not have been seen by our newer readers, and those sending us numerous letters of inquiry. We can not find time to write to each one of these in detail, and we must make this general reply serve for many. The Washer acts upon the principle of the "bucking tub," so generally in use in bleacheries, etc., where immense quantities of fabric are to be cleansed, and causes a continuous stream of boiling suds to fall upon, and pass through, the clothes. If the suds is clean it will make clean clothes. If already charged with the soiling material from very dirty clothes, it will not make but slightly soiled ones cleaner. Used with common sense and judgment, it can be a great help in washing. Left to those who have neither sense nor judgment, and who have a natural prejudice against whatever is different from that to which they have heretofore been used, such people will contrive to make it a failure.

Draining, and the Reasons Why.—Sometimes a catalogue or price-list is much more than it pretends to be. An instance of this is presented in a price-list of only four pages, by Wm. M. Bell, Smyrna, Del. The description of the tiles made and the prices at which they are sold occupy but a small space, while the rest is occupied by a condensed, well put treatise showing why people should drain, and telling how it should be done—whether to increase the crops of the farm or to promote the health of the family of the farmer.

A New Work on Peach Culture.—Mr. John Rutter, a skilled Nurseryman and Fruit Grower, of West Chester, Pa., has just published a small work on the Culture and Diseases of the Peach. The Author claims that peaches may be successfully and profitably grown, outside of the few localities heretofore regarded as especially "Peach Districts," and that the failures from "Yellows," and other diseases, are due to bad culture, or rather want of culture. He gives in a plain and unassuming style, the methods that he has found so successful himself, that he commends them to others. We trust that the work may be the means of greatly extending the culture of this favorite fruit.

"Forty Years' Experience in Pear Growing," by William Parry, of Cinnaminson, N. J., is the title of a pamphlet of 20 pages, mainly filled by an address given by Mr. Parry, before the N. J. Horticultural Society. Much space is given to the Kieffer, and other new pears that are regarded as hybrids, between the Chinese Sand Pear, and our cultivated varieties, and of which Mr. Parry has strong hopes. The Author presents an excellent portrait of himself with the work, which will cause people to think that he must have begun pear culture at a very early age, in order to have gained 40 years of experience.

A Slight Omission, but an important one. Some one writes to inquire if a certain paper has stopped, as he can get no answer to the letters he has written to the office. If the letters sent to the other paper were like the one to us, it would be rather difficult for him to get an answer, as he gives neither town, city, or State.

Just How.—A correspondent wishes to know if we can not give an article that will tell him "just how" to prune his grape-vine. We could not do this without an exact diagram of the vine as it now is, and such directions for pruning this would be of no use as a guide for any other vine or for the same vine next year. The growth of the vine is according to a few simple laws, and one to prune a vine properly, must, in the first place, have a definite idea of what he wants to do with it; then keeping in mind the manner in which he can do it in accordance with the laws governing the growth. There is no way of removing the necessity for thinking.

"The American Entomologist."—When Prof. C. V. Riley, nine years ago, found it necessary to suspend for a while the publication of this Journal, the fact was regretted by all interested in Entomology, whether in its scientific aspects or in its relation to Agriculture and Horticulture. That its publication, after an unexpectedly long interim, has been resumed, will equally interest the same persons we may feel sure, but the appearance of the Journal should be welcomed by that large number who, during its suspension, have become interested in Entomology as a science or as an important part of a cultivator's knowledge. The Journal re-appears with its former mechanical form. Its editorial force has been strengthened by the addition of Mr. A. S. Fuller, who brings valuable aid to Prof. Riley. The Journal promises to be, as it formerly was, not merely the organ of scientific entomologists, but one which the fruit-grower and cultivator generally can not well do without. The same prominence, as before, is given to the practical aspect of the science, and the Journal is one worthy of abundant support. This time the Journal is published in N. Y. City by the "Hub Publishing Company," No. 323 Pearl St., to whom subscriptions ($2.00 per annum) may be sent.

Peanuts in California, are chiefly grown in eleven counties. The total number of acres is 436, with a yield of a trifle over a thousand pounds per acre.

Weaning Calves.—"L. E. B." The method of weaning calves by means of an artificial teat in the bottom of a pail, is very simple. All that is needed is to make a mold of elder wood, and cover it with soft leather or rubber tubing, and fasten this to the bottom of a pail. A sufficient opening must be made in the bottom of the tube to let in the milk, when the calf sucks the upper part.

Farm Wages.—The official reports show that with few exceptions the price paid for farm labor in the various States of the Union was 3 to 15 per cent lower during 1879 than the previous year. In New England, for example, the average rate was $20.31 against $22.60 for 1878. The decline in the cost of living has been in about the same ratio. In Minnesota, California, and other States and Territories in the Northwest, wages have been an exception to the rule throughout the East. As the wages have increased in the Pacific States, so has the cost of living in a much greater ratio. The English agricultural laborer receives on an average $15.60 per month and that without board and lodging. In Ireland, Italy, Spain, and France, it is 5 to 12 per cent less than in England. In view of this the American farm laborer getting $1 and board for eight months, and in many cases for the whole year, is doing well.

A Modern State Fair: Graphic Description.—Gov. Furnas, of Nebraska, must have been traveling eastward, for it seems hardly credible that his graphic picture, and unfortunately a too true one of *some* cases, could have been inspired by anything that would be allowed by the good people of Nebraska... "Bands of Music, Dance Halls, Horse-races, Mule-races, Slow-races, Foot-races, Sack-races, Balloon Ascensions, Greased Pigs, Greased Poles, Wheels of Fortune, Rocking Swings, Tight-rope Performances, Female Pedestrians, all manner of Venders, from the Peanut Stands, *ad infinitum*, together with numberless nameless incidents, *et hoc genus omne*—all securing a crowd, good times, large gate receipts, and enabling the Board to 'pay out.'"

Carp Culture in California.—A correspondent of the "Pacific Rural Press," gives his experience in the culture of the carp, which, to say the least, is very satisfactory to him, and encouraging to all who may desire to grow this kind of food. In January, 1876, he bought six carp, one of which soon died. The first year he raised 2,044, and in 1877, 2,672, from the same five fish. In 1878, he disposed of two of the old fish and reared 4,000 from the remaining three. The crop for 1879 has not yet been put into figures. The four fish ponds cost $50 each; first cost of fish $30; food $10; total, $240. He has sold $415 worth of fish, and has from 6,000 to 8,000 carp in his ponds, besides his family has been eating carp for the past 18 months. The ground devoted to this industry, that is, the area covered by the ponds, etc., is about a half acre; and it is to be remembered that it was wet, waste, and otherwise comparatively worthless land at that.

Peaches for New England.—We are glad to hear of the planting of peach orchards in places where their culture was long ago abandoned; in Eastern New York and Northern New Jersey peach culture has taken a new start, and recently several inquiries come from New England. One obstacle to peach culture is the common notion that a peach tree should last an ordinary life time. In some peach districts they are content if they get two good crops in five years. Trees are exceedingly cheap, and when one planting shows signs of failing, set out another. Our New England correspondent asks for a list of about six varieties suited for market for Eastern Massachusetts. As to varieties nearly every place has one or more local varieties that succeed better than almost any others. For early varieties, Hale's Early, in many places rots so badly just at ripening, as to be useless. Waterloo, Amsden, and a number of other new very early kinds are offered, and seem worthy of trial. One planting for market should look into the merits of these. For six established varieties: Early York, Crawford's Early, Cooledge's Favorite, Old Mixon Freestone, Crawford's Late, Ward's Late Free; also Morris' White.

Sale of Stock by Weight.—Dr. J. B. Lawes, in a recent number of the "Mark Lane Express" stands up strongly in favor of using the scales in all sales of live stock. There is enough uncertainty in the farmer's occupation which cannot be avoided; but the guess-work and the great amount of time spent in making rough estimates, should be superseded by the quick and satisfactory method of actual weighing.

Experience with Canada Thistles.—F. Bacon writes from Lake Co., Ill., essentially as follows: "Eleven years ago I bought my present farm, and upon it was a patch of Canada Thistles covering about 1¾ acre of land, bordering on a slough. It was so boggy and rough that it was impossible to mow them, even with a scythe, so they had yearly to be cut with hoe or spade, making the job an expensive one. Having the slough first well drained, I plowed the piece—through the summer of 1878—plowed, harrowed, or cultivated, every time a green plant appeared. On the first part of Sept. I gave the field a thorough plowing, harrowing, and rolling, and sowed broadcast, by hand, 2½ bushels of winter wheat. Having just threshed, I give the result, which was 81 bushels machine measure, weighing 66 lbs. to the bushel. I had one load of rakings that was threshed with spring wheat, that I have no doubt would have made 5 to 8 bushels more. Every part of it was lodged, and consequently there was a great deal left on the ground. I have no doubt that there were 100 bushels grown on the ground, and not a thistle has been seen since." But was this really the "Canada Thistle?" The ease with which it was subdued makes us suspect that it may have been some other thistle.

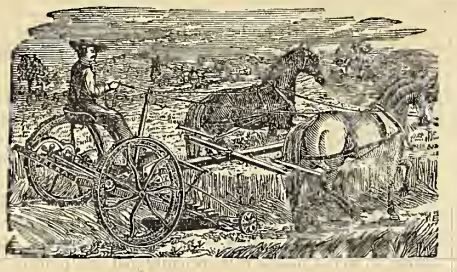
Shrinkage in Hogs.—A western farmer, to determine the amount of loss of weight in killing and dressing hogs, selected twenty hogs that had been fed in the average way, on corn, etc., and weighing about 150 pounds. The shrinkage in this experiment was a trifle over one-seventh of the live weight. The loss from the flow of blood in "sticking" was determined in two cases, namely, 8 and 7¼ pounds. But the breed has much to do with all this, and such statistics, to be of value, should state the breed of the animals.

A Wood Shed is a necessary part of every economical farmer's home. It does not cost much in its construction; is a great convenience in keeping the wood dry, and furnishes a shelter in which much, if not all the work, of preparing the wood for the stove can be done in stormy weather in winter and the rainy days of summer.

Cure for Cribber.—"H. J. S.," Fisher's Ferry, Pa. The most effective remedy for a cribber, is to cause the horse to wear the cribbing muzzle, described in the *American Agriculturist* for July, 1875. This does not prevent eating or drinking, but the horse cannot take hold of his crib, or a post, with his teeth.

North Carolina.—We have on a former occasion commended the enterprise of Mr. Geo. Allen, Seedsman, of Newbern, in distributing the *American Agriculturist*, and in otherwise aiding the farmers of his State. He now publishes a bulletin, in which he gives "Fifteen Reasons for Emigrating to North Carolina," and other useful items.

To Raise a Roof.—"R. M. C.," Washington, Pa. It is an easy matter to raise the roof of a building so as to build an extra wall under it. Loosen the plates from the wall and raise the roof, one corner at a time, resting the roof on timbers placed across the corners of the building. As the roof is raised build up the wall, and as this is done, raise the roof. If the building is a frame one, the roof must be raised the intended hight first, resting on blocks placed on the floor under it; and the studding spliced and mortised into the plate. The raising may be done by levers, a little at a time, or by jack-screws. But it should be secured as it is carried up, so that it cannot go over sidewise.



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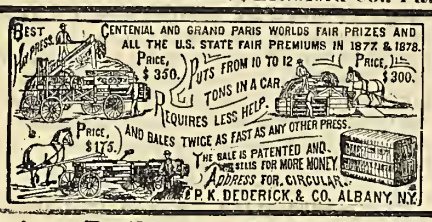

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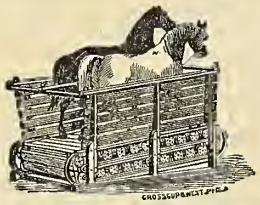

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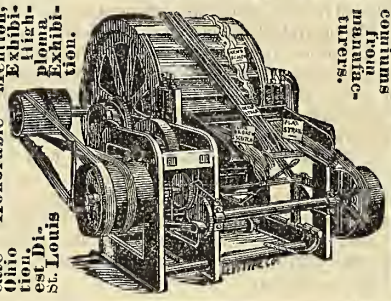

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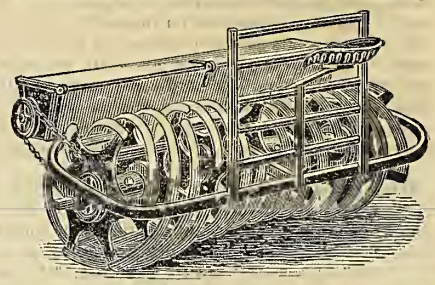

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I seeded 3,400 acres of wheat with these machines....The stand of wheat is now the best I have ever seen on new land. R. J. WEYMESS, Trustee.

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This year I harvested, on 190 acres, 6,100 bushels of wheat. ....In my opinion the Screw Pulverizer increased the crop one-third over what I could have got by any other method. D. G. MOORE.

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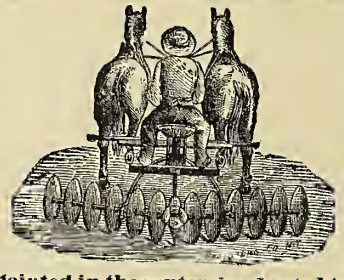

Being jointed in the center, is adapted to both smooth and uneven surfaces. Acknowledged the best of the kind, and will pulverize and cover seed better in one operation, than going over twice with others. Made with both Chilled Metal and Cast Steel Discs polished. Send for circular and price list. Manufactured by

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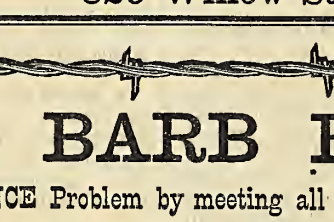

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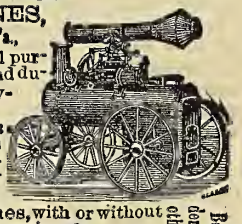

Fig. 1.

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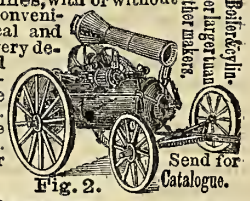

Fig. 2.

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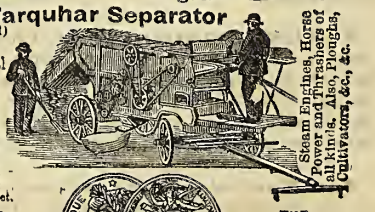

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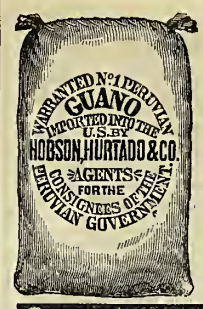

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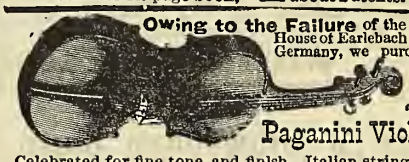

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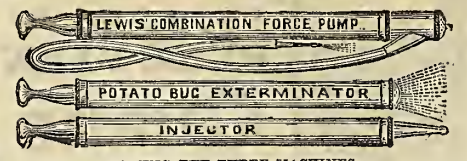

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This combination makes three complete machines (see cut). Pump will throw a good sized stream 50 to 60 feet. Has three ft. of hose attached. Is converted into an Injector, Insect, or Potato-Bug Exterminator in a minute. 100,000 sold in five months. You get three machines, worth at **least** $10.00, for $5.00 for brass, and $6.00 for nickel-plated, or half-price of any other first-class pump alone. It is the most powerful and easiest working pump in the market. An ever-ready household fire engine. They sell at sight. Agents wanted everywhere. We will send sample. Express paid to any express station in the U. S. or Ca. for 30c. in addition to cost of Pump. Weight 4½ lbs., Length 32 in. Our Agents are making $10.00 to $20.00 per day. We send the proof. Send for descriptive circular, testimonials, and terms to agents. We furnish the Exterminator alone. Sample machine, post-paid, $1.25 for zinc tubes, or $1.75 in brass. One-half pound Paris Green will give an acre three separate dressings.

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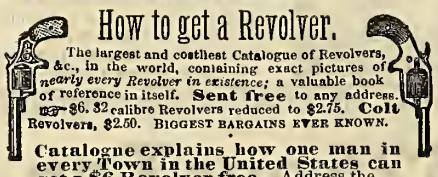

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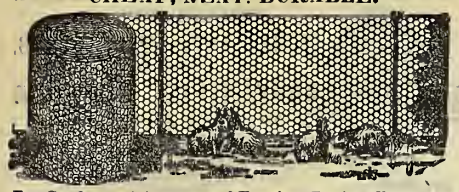

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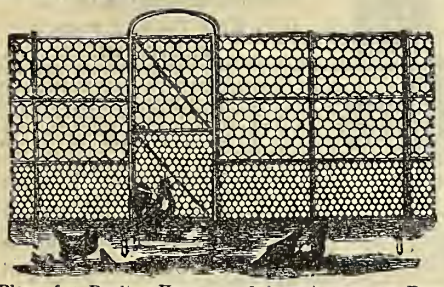

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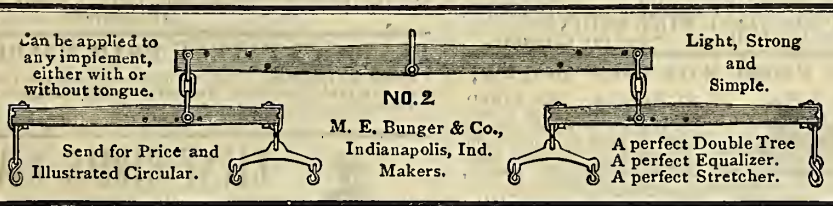

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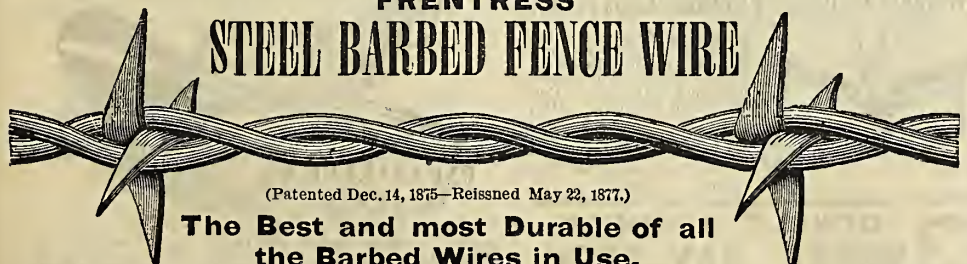

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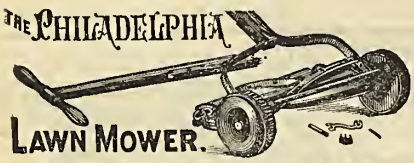

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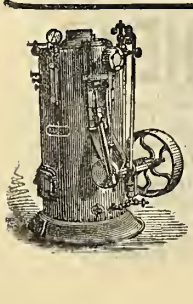

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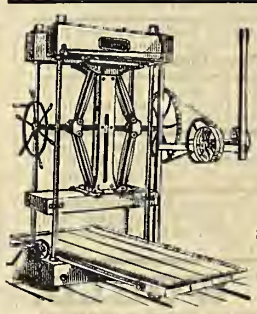

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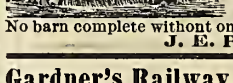

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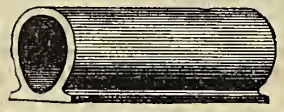

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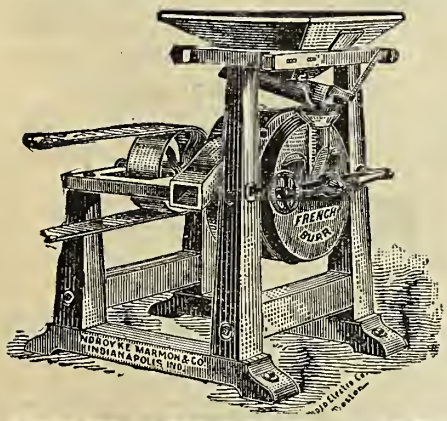

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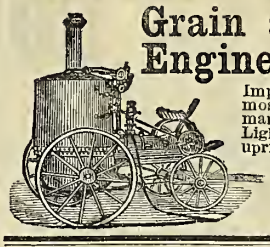

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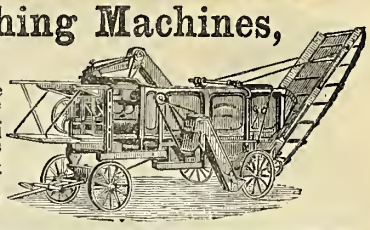

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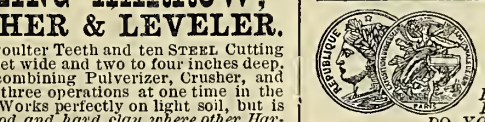

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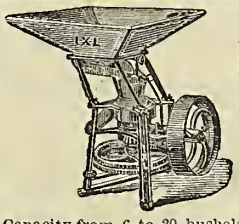

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Same Sulky answers for Plowing, Cultivating, and Harrowing. Can use with same any good Implements. Send for Circulars.

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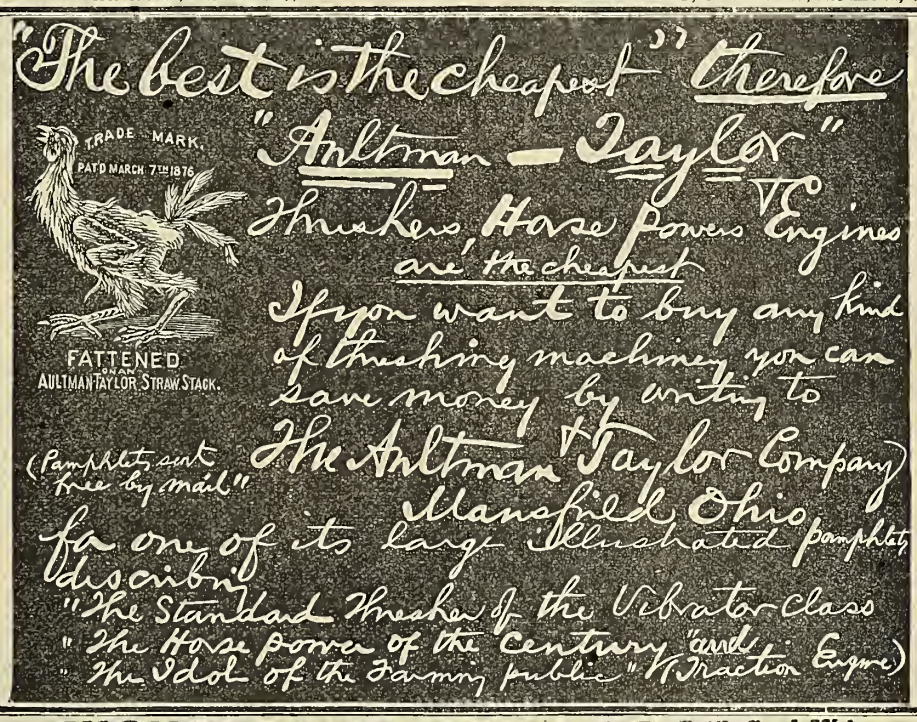

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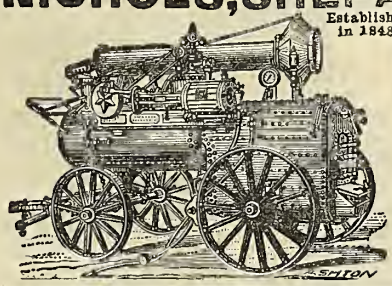

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Threshing Machinery and Portable and Traction Engines.

THE STANDARD of excellence *throughout the Grain-Raising World.*

MATCHLESS for Grain-Saving, Time-Saving, Perfect Cleaning, *Rapid and Thorough Work.*

INCOMPARABLE in *Quality* of Material, *Perfection* of Parts, *Thorough* Workmanship, *Elegant* Finish, and *Beauty* of Model.

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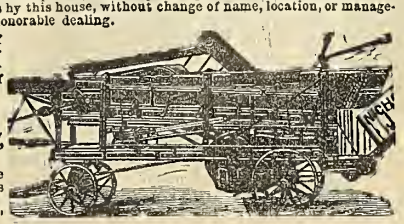

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Best sorts, imported direct via San Francisco, in original clay. If you are interested in **Lilies** or other **bulbs,** write to **J. C. VAUGHN, 45 La Salle St.,** CHICAGO.
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It received the HIGHEST PREMIUM at the International Dairy Fair in New York City, in competition with all the leading churns in the market.

Nine sizes made, churning from one to one hundred gallons. Warranted to be exactly as represented.

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Rectangular and Square **BOX CHURNS**

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Send for circulars with full details. Liberal terms to dealers.

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BUTTER COLOR

Has taken **TWENTY FIRST PRIZES,** including **Three Gold Medals** at World's Fairs.

It is prepared in vegetable oil, and is *used to color* **the finest butter** made in the world. *Does not color the buttermilk,* but makes the butter beautiful and **greatly** *enhances its value.* **No alkali** is used. The famous Elgin (Ill.) butter is colored with it. One dozen sample bottles, with directions for making finest butter, will be sent **free** to any Druggist or Dealer ordering same. Also **CHR. HANSEN'S DANISH**

LIQUID CHEESE COLOR AND LIQUID EXTRACT OF RENNET.

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Offers **complete outfits** for large and small **Butter Dairies,** of the newest and of the best apparatus and appliances.

The most approved and simplest apparatus for securing, cooling, and delivering **pure milk** and **cream** a specialty.

Ice Chests, Refrigerators, and Cold-Rooms, estimated on and constructed to order.

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Butter Packages for square or round prints with molds to match.

Air-tight Butter Packages for holding two to ten pounds in crates of 48 to 60 lbs.

Milk-Setting Appliances.—Cooler pails, do. ventilated, with and without windows to inspect depth of cream.

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The Perfect Milk Pail. The Pendulum Churn.

Our specialties, and the best of their kind in the world. Address as above.

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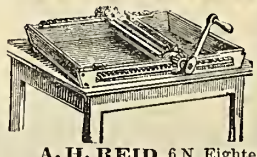

The most effective, simple and convenient yet invented. **Works 30 lbs.** *in less than* **5 minutes,** *thoroughly working out buttermilk and mixing in the salt.* **AGENTS WANTED.** *Send for Circular.*

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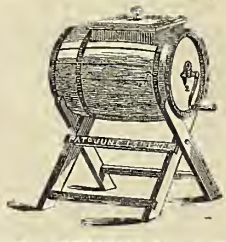

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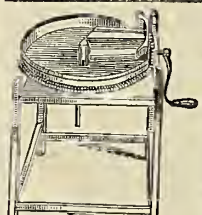

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Won **First Premium** at the American Institute Fair, New York, in 1878; at the Fair of the Penn. State Agricultural Society in 1879; at the Dairyman's Fair at Delhi, N. Y., in 1879, and at County Fairs innumerable. Acknowledged to be the **only self-feeding and reliable machine in the market.** Descriptive circular sent free.

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Introduced 14 years ago, and the acknowledged standard churn of the country. Easily operated and easily cleaned, making beautiful butter by the extra working of the dasher on the butter while churning. Our Union Churn has been awarded the first prize over all competitors at twelve different State Fairs. Every Churn warranted. Address TIFFIN UNION CHURN CO., Tiffin, Ohio.

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OUTFITS A SPECIALTY. Everything needed in a Cheese Factory, Creamery, or Dairy. The best Portable Boilers and Engines in market. Send for circular. Correspondence invited. **JOHN S. CARTER,**
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One of McConaughey's Reliable Hand Corn Planters for planting and replanting in the most practical manner in all kinds of soil. Every machine warranted. Price only $3. Agents wanted.
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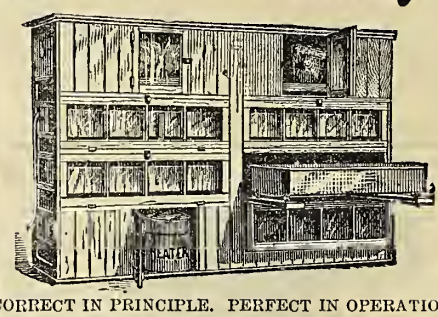

CORRECT IN PRINCIPLE. PERFECT IN OPERATION.

Awarded the International Diploma at the Dairy Fair, 1879.

It maintains a perfectly uniform temperature at 60°.

It increases the production of Butter fully ten per cent.

It makes Butter unexcelled in texture, flavor and keeping qualities.

It requires the least labor of any system.

It will last twice as long as any other apparatus.

It is a perfect Refrigerator for Cream and Butter.

It can be used with either ice or water.

☞ Send for large circulars giving full particulars and many other testimonials.

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Cooley Creamer

Awarded Gold Medal at Paris Agricultural Exhibition, 1879.

Butter made by this process awarded Sweepstakes at International Dairy at New York, 1878. Two Gold Medals and First Premium on Dairy Butter at same Fair, 1879.

It requires no milk room.

It raises all of cream between milking.

It affords best ventilation to milk.

It is more thoroughly made.

It is cheaper. It requires less labor, and gives better satisfaction than any other way of setting milk.

Send for "Dairyman," giving full particulars and testimonials.

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Cheese and Butter Makers' Supplies.

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PERFECTED BUTTER COLOR

It Gives Butter the gilt-edged color the year round. The largest Butter Buyers recommend its use. Thousands of Dairymen say **IT IS PERFECT.** Used by all the best Creameries. Awarded the International Diploma at N. Y. Dairy Fair. Ask your druggist or merchant for it; or write to ask what it is, what it costs, who uses it, where to get it. **WELLS, RICHARDSON & CO., Proprietors, Burlington, Vt.**

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For SPRING and SUMMER

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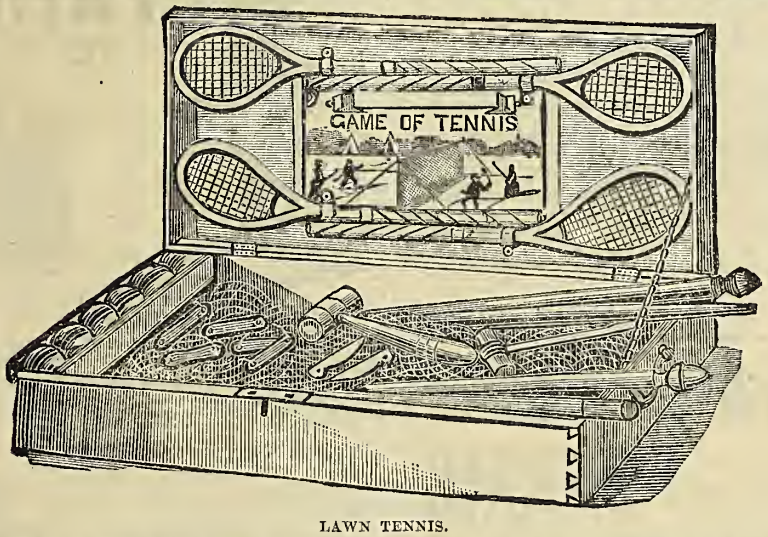
LAWN TENNIS is doubtless the finest game for the family now on the market, and people who have lawns, can hardly afford to be without a set. They have never been so low in price and high in quality as this year, and even to the cheapest set, $10, they are serviceable, lasting for years, and a game that



LAWN TENNIS.

the whole family can enter into; easily learned and affording exercise with amusement.

Write for full instructions and prices, which range from $10, to $60. The more expensive sets are also used for the Game of **Badminton**, which is played similarly to Tennis. The cheapest sets are of first-class make and regulation size.

Correspondence solicited.

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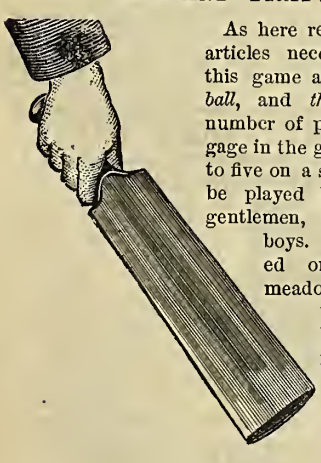
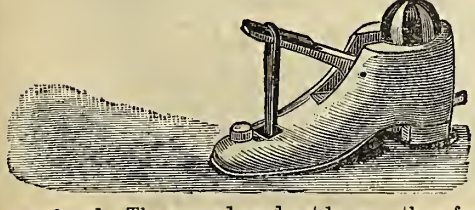


As here represented, the articles necessary to play this game are *one bat, one ball*, and *the trap*. Any number of persons can engage in the game, from one to five on a side, and it can be played by ladies and gentlemen, or girls and boys. It can be played on the lawn, meadow, or any place where base-ball, lawn tennis, or croquet



are played. The ground need not be smooth as for croquet. It is very fascinating, and has as much variety as any other popular game. **Rules** accompany each game, and they are easily learned.

Price, $2.00.

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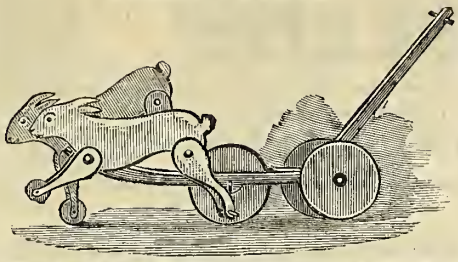

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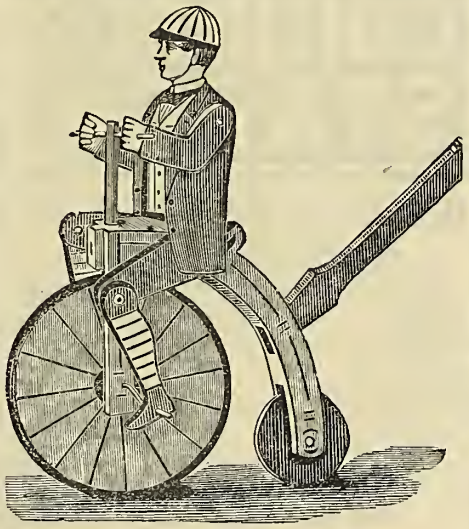

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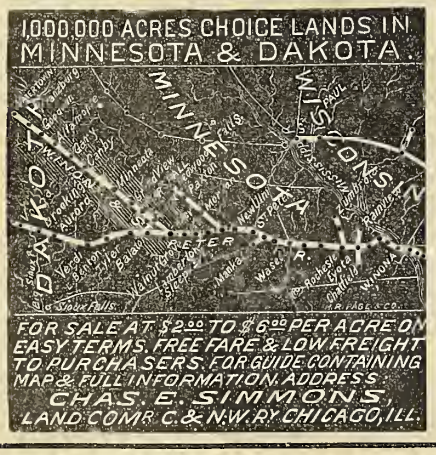

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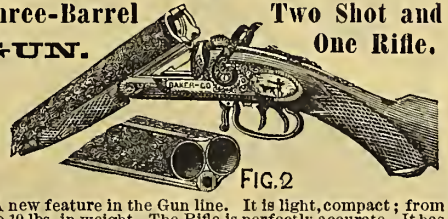

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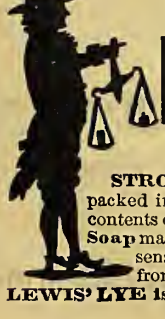

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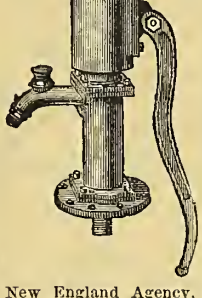

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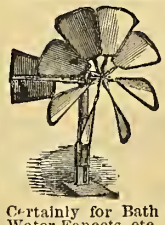

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Tennessee.
Indiana.
Michigan.
Illinois.
Wisconsin.
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Missouri.
Kansas.
Nebraska.
Minnesota.
Dakota.
Colorado.
California.
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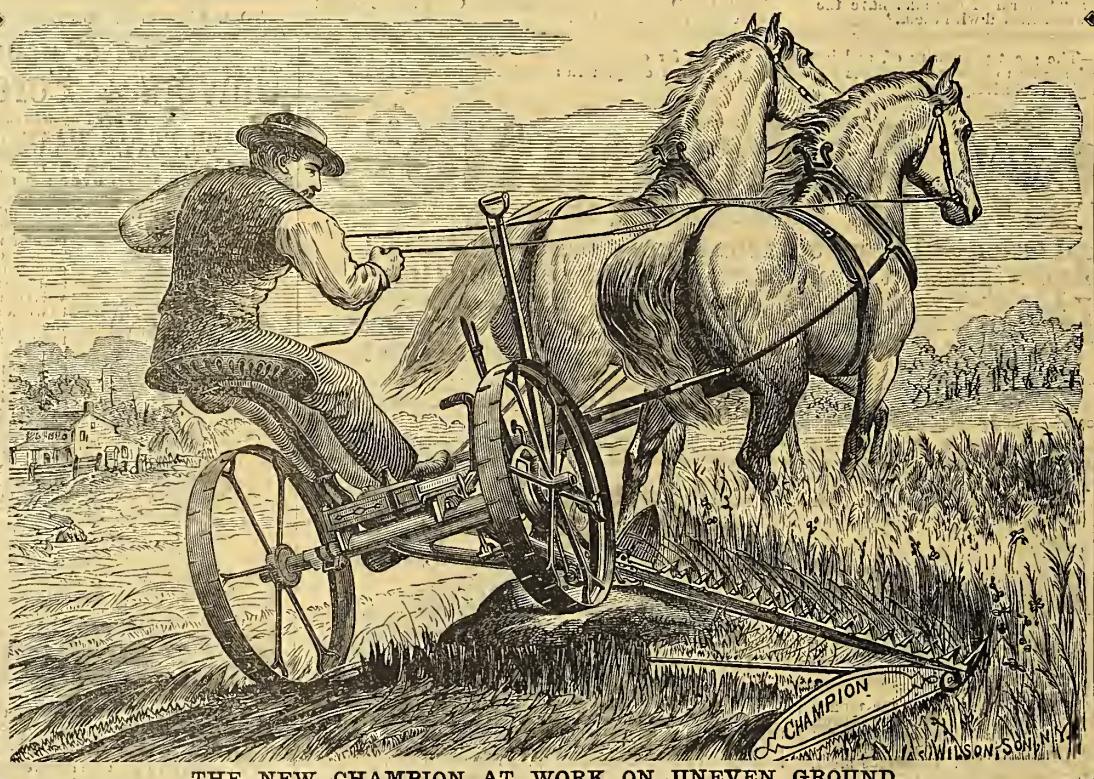
North Carolina.
South Carolina.
Georgia.



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MAY, 1880.

AMERICAN AGRICULTURIST.

FOR THE FARM, GARDEN & HOUSEHOLD.

VOL. XXXIX. NUMBER 5.

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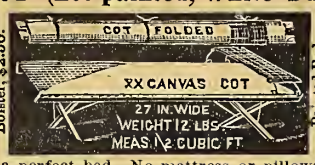

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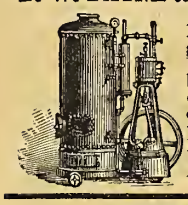

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TOBACCO.

Have used the Mapes Complete Manure for Tobacco for two years. Can grow with it a leaf of SUPERIOR QUALITY *at* LESS *than one-half the cost of stable manure.*

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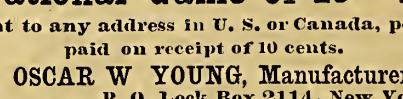

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VOLUME XXXIX.—No. 5. NEW YORK, MAY, 1880. NEW SERIES—No. 400.

THE NOON-DAY HOUR ON THE FARM.—DRAWN BY R. E. ROBINSON.—*Engraved for the American Agriculturist.*

The human system taken in all its parts is a very wonderful self-governing, and at the same time, dependent machine. In order to keep this machine in good running order—and we are using the term machine in the highest sense—it must have food and rest. All experiments that have been tried to test the results of the absence of food upon the animal system, have ended, if carried to their fullest extent, in the same manner with that so often quoted experiment in horse keeping, in which, as related by the owner: "Just as I had got him so he would get along on one straw a day, he died." The system will assert its demands for food in the severe pangs of hunger, and the lack of rest will make itself known in involuntary sleep. Out of these necessities of the case, there has grown the common-sense custom of "taking a nooning" of an hour or so in the middle of the day, in which the system is replenished with food, and the nerves and muscles refreshed by a period of inactivity. A Spanish-American town is in mid-day hours as quiet as one in New England on the Sabbath. One from the North in visiting such countries is apt to look upon the people as indolent, but he soon falls in with the custom, and finds that the *siesta*, as the noon-day nap is called, and which is taken by the richest and poorest alike, is not a manifestation of laziness, a mere habit, but a wise compliance with the demands of the climate.

In the above engraving of an after-dinner scene upon the farm in early summer, or in "hoeing time," as we sometimes say, the artist has attempted to show the manner in which different members of the family pass the noon-day hour. The hired man is spending his time in the companionship of his pipe, while his thoughts may be wandering in a foreign land from which he came not many months ago. The boys—and by the way, who enjoy a *long* nooning more than they—are stretched upon the grass, one with a book, while the other is having a good time with old "Rover"—the joy of the young farmer's heart, and the best sheep dog in the neighborhood. The scene at the well is—well!—the old, old story?—we will let well enough alone. The head of the family finds his rest in the newspaper, and is refreshed with the knowledge of the doings of the great and active world beyond the boundaries of his farm. In the half hour dividing the labors of the morning from that of the afternoon, he acquires a fund of information that keeps him abreast with the world, and alive to the importance of his own calling. A little time thus taken from the toils of the day refreshes and strengthens the man, and makes the whole life fuller, and, therefore, nobler and better. The Noon-day Hour should not be a time of thoughtless inactivity, but a period of intelligent recreation.

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Australian Meat in England.—A steamer freighted with beef and mutton from Australia recently arrived in England after a successful voyage, the meat having been kept in excellent condition by the cold air process used here in transporting dressed meat from Chicago to the Eastern markets. Naturally the English people will prefer to purchase of their own colonists provided it does not cost anything for the patriotism. This source of competition is a matter of special interest to the American raisers and exporters of meat.

Calendar for May, 1880.

1 Day of Month.	1 Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Moon rises.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Moon rises.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Moon rises.
		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	S	4 55	6 59	0 58	4 58	6 56	0 55	5 2	6 52	0 51
2	S	4 53	7 0	1 17	4 57	6 57	1 26	5 1	6 53	1 24
3	M	4 52	7 1	1 54	4 56	6 58	1 53	4 59	6 54	1 52
4	T	4 51	7 3	2 18	4 54	6 59	2 19	4 58	6 55	2 16
5	W	4 49	7 4	2 42	4 53	7 0	2 43	4 57	6 56	2 47
6	T	4 48	7 5	3 6	4 52	7 1	3 9	4 56	6 57	3 11
7	F	4 47	7 6	3 32	4 51	7 2	3 36	4 55	6 58	3 39
8	S	4 46	7 7	4 1	4 50	7 3	4 5	4 54	6 59	4 10
9	S	4 45	7 8	sets	4 49	7 4	sets	4 53	7 0	sets
10	M	4 43	7 9	8 54	4 48	7 5	8 48	4 52	7 1	8 43
11	T	4 42	7 10	9 45	4 47	7 6	9 39	4 51	7 2	9 33
12	W	4 41	7 11	10 29	4 46	7 7	10 24	4 50	7 3	10 18
13	T	4 40	7 12	11 7	4 44	7 8	11 3	4 49	7 3	11 53
14	F	4 39	7 13	11 40	4 43	7 9	11 35	4 48	7 4	11 32
15	S	4 38	7 14	morn	4 42	7 10	morn	4 47	7 5	morn
16	S	4 37	7 15	0 9	4 42	7 11	0 6	4 46	7 6	0 3
17	M	4 36	7 16	0 35	4 41	7 12	0 34	4 45	7 7	0 32
18	T	4 35	7 17	1 1	4 4	7 13	0 59	4 44	7 8	0 59
19	W	4 34	7 18	1 25	4 39	7 14	1 25	4 44	7 9	1 27
20	T	4 33	7 19	1 50	4 38	7 15	1 56	4 43	7 10	1 54
21	F	4 33	7 20	2 20	4 37	7 16	2 33	4 42	7 11	2 26
22	S	4 32	7 21	2 53	4 37	7 16	2 57	4 42	7 11	3 2
23	S	4 31	7 22	3 35	4 36	7 17	3 40	4 41	7 12	3 46
24	M	4 30	7 23	rises	4 35	7 18	rises	4 40	7 13	rises
25	T	4 29	7 24	9 24	4 34	7 19	9 19	4 40	7 14	9 13
26	W	4 28	7 25	10 15	4 34	7 20	10 10	4 39	7 15	10 5
27	T	4 28	7 26	10 56	4 33	7 21	10 52	4 38	7 15	10 48
28	F	4 27	7 27	11 29	4 33	7 21	11 27	4 38	7 16	11 24
29	S	4 27	7 27	11 57	4 33	7 22	11 56	4 37	7 17	11 55
30	S	4 26	7 28	morn	4 3	7 23	morn	4 37	7 18	morn
31	M	4 26	7 29	0 22	4 31	7 24	0 22	4 37	7 18	0 23

PHASES OF THE MOON.

MOON.		BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	D.	H. M.	H. M.	H. M.	H. M.	H. M.
3d Quart.	1	9 9 mo.	8 57 mo	8 45 mo	8 33 mo	8 3 mo.
New M'n	9	1 32 mo.	1 20 mo.	1 8 mo	0 56 mo.	0 26 mo.
1st Quart.	17	5 39 mo.	5 27 mo.	5 15 mo	5 3 mo.	4 33 mo.
Full M'n	24	1 55 mo.	1 43 mo.	1 31 mo	1 19 mo.	0 49 mo.
3d Quart.	30	6 9 ev.	5 57 ev.	5 45 ev.	5 33 ev.	5 3 ev.

AMERICAN AGRICULTURIST.

NEW YORK, MAY, 1880.

Hints for the Work of the Month.

[*The Hints and Suggestions in these columns are never copied from previous years, but are freshly prepared for every month, from the latest experience and observations, by practical men in each department.*]

May is a very busy month, and there is so much work crowded into it that a farmer is in danger of being in a hurry. Every hour of work should be so planned that it will tell most effectually, and this requires considerable thought in order to do the most urgent and important work first, and leave undone those things which may be done almost as well bye and bye. As we sow so do we reap, and as this is the month of sowing, the work now will in great measure determine what the harvest of the year shall be. Keep pushing on, but with a plan.

Labor.—It must be admitted by every one familiar with farm work, that the labor problem is a difficult one, and it may fairly, from its importance, claim the first consultation in deciding upon the plan of operations for the year. The largest possible crops may not return a profit, if the labor in their production has not been well planned. One of the most important advantages obtained from a systematic rotation of crops, consists in the judicious distribution of labor throughout the year so that there may not be a surplus at one time, and a deficiency at another that will require the employing of extra hands at the higest wages.

Corn.—In the Northern and Western States, corn planting will be the leading occupation of the month, but this should not prevent a fair share of attention to other crops that will be needed as a reserve when pastures are getting short, as well as to furnish a variety of feed for winter's use. A soil in high condition, and thoroughly prepared, will give the best promise of a good—paying—crop of Indian Corn. The previous cropping of the soil, will have an influence upon the crop, which is nearly as important as the immediate application of manures. A good clover sod, or a grain, or a root crop, immediately after a fair crop of clover, may be followed by corn with a good prospect of success.

Plowing.—The plowing, and all subsequent preparations of the soil for the seed, should be done in the best possible manner. In turning a sod for corn, any breaks or "balks" in the work will prove an annoyance in after cultivation, and should be avoided. In many localities, especially at the West, the Kentucky Blue Grass (*Poa pratensis*), is a troublesome weed in a corn crop, and it can only be subdued by careful and thorough tillage.

Manures.—Corn, unlike the other cereals, will bear the direct application of manure in liberal quantities. For immediate results, well rotted manures are always best, but that taken unfermented from the barn-yard may be applied to corn. Long manure may be placed under, while short manure may be spread upon the surface and worked into the soil by the harrow and cultivator.

The Time of Planting Corn will of course vary with the locality, but it will be better, as a rule, to secure a thorough preparation of the soil before putting in the seed, even if it somewhat delays the time of planting. Late planted corn, in a warm well pulverized soil will usually take the lead of that which has been struggling from an early start under unfavorable conditions.

Insects.—The Potato Beetle has become such an abundant and troublesome pest that it should be given no quarter—not even from the start. By combined effort in the early portion of the season the "bugs" may be kept in check and thus do very little damage. Paris Green has been so long and successfully employed that it is scarcely necessary to explain its mode of application. Suffice it to say that the liquid method is the one now generally practised, that is, mix the Paris Green with water and sprinkle it upon the vines. A coffee pot may be converted into a sprinkler by providing the spout with an extension and a rose at the end. The only source of danger is in the careless handling, and the poison should be kept and used with a full knowledge of its nature.

Hills or Drills.—On clean land drills may give the best returns, but if weeds are plenty, hills will be better, as they allow of cultivation in two directions.

Seed about which there is any doubt, should be tested before planting to ascertain whether it will grow. Badly kept seed often causes disappointment from its failure to germinate.

Mangels may be sown early this month. Our practice has been to sow in drills 30 inches apart, using six pounds of seed per acre. A liberal supply of seed is required to secure an even stand, and the plants should be thinned by striking a broad hoe directly across the drills so that single plants will stand 12 to 16 inches apart. Root crops are often a failure from defective thinning.

Clover.—An early rolling of clover to settle the roots that have been raised by frost will be especially appropriate after the open winter just passed. Fifty pounds of plaster per acre will often have as good effect as the larger doses of 100 and 200 lbs. that are recommended. Wood ashes on many soils will be found an useful application.

Meadows.—Pick up any stones that may have been raised above the surface from the action of frost. The roller may be used to bring the surface into good shape for the mower. Meadows are frequently injured by the tread of cattle before the ground is fairly settled. The grazing of meadows in spring is at the expense of the hay crop. It is better to keep cattle in the barn until the pastures are ready to furnish them a full ration.

New Fodder Crops.—The *American Agriculturist* has called attention to the new fodder crops as they have appeared. It is very desirable to have a plant that, with no more trouble in cultivation than fodder corn, shall yield 3 to 6 times as much from the same land. The most promising plants for the Northern States are the different varieties of "Durra," called Egyptian and China Corn, Pampas Rice, etc., and the Pearl or Cat-tail Millet. Experiments with these on a moderate scale may be useful, while as

Fodder in the Southern States the Guinea Corn (*Sorghum Halepense*) is esteemed by many, and the Teosinte (*Euchlœana luxurians*) described in January last, promises to be of great value. It is not too late to form an estimate of its value, and should it be desirable, to raise a stock of seed for next year.

Cow Peas, this great fodder crop of the Southern States, which in renovating land there, takes the place of clover, and is worthy of more attention than it has yet had from northern farmers. Though we can not plow under two crops the same season, we can easily get one, and a heavy one, whether for feeding or for turning under. Two bushels of seed to the acre, and plowed under with a shallow furrow, is the usual quantity. Another method practised at the South is to put in the seed, at the last hoeing of a field of corn, and as soon as the corn is off of the ground the pea crop is plowed under.

Jerusalem Artichokes are growing in favor; they are relished by nearly all domestic animals. They may be left in the ground all winter, and when dug in early spring are crisp and fresh and the most acceptable change in the feed. The round, short variety called "Brazilian" is best. The seed is cut the same as potatoes, furrows made 3 feet apart, and the pieces dropped about 12 or 15 inches apart in the furrow and covered with a few inches of earth.

Sorghum—The introduction of the early Amber Cane, has again turned the attention of farmers to raising their own "sweetening," and no doubt many will make a trial of it, who have never grown Sorghum, or even seen it growing. As the Amber is evidently vastly superior to the older varieties, to avoid disappointment, be sure to get seed of the true sort. Seedsmen of good reputation, and the makers of sugar machinery, can supply it.

The Seed, to make sure of its good quality should be tested, by sowing 20 or more seeds in a box of earth kept in a warm place, as the kitchen window, and noting the number that germinate.

Land for Sorghum should be such as would produce a good crop of corn, and prepared in a similar manner. The ground for early Amber is checked off 3½ feet each way, taking care to check it regularly, so that the crop may be easily worked both ways; with these distances, about two pounds of seed to the acre will be required. By "hills," no elevation of the ground is meant, but the term is in common use for the spot, or place for the seed. For Sorghum the ground should be level. About 10 or 12 seeds are to be dropped in a place, and covered.

Early Cultivation is necessary. The time for planting is the same as for corn, or whenever the soil has become sufficiently warm to allow the seed to germinate at once. Observe that the plant, when it first appears, looks so much like grass, that a careless hand might take it for a coarse grass, and treat it as a weed. Success with the crop depends upon giving the plants an advantage over the weeds at the start, and to do this, cultivation should begin as soon as the rows can be seen. Whatever implements are used for the corn crop, may be used to till the Sorghum, but hand-hoeing will be necessary at first. At the second working of the crop, thin out to 5, or at most 6 stalks in a hill. When the plants get to be 3 feet high, the crop is left to itself until it is time for cutting the canes.

Manure.—None of this valuable substance should go to waste. Any manure scattered over the yards should be raked into a heap and secured from exposure to rain, or put at once upon the field.

Sheep.—Sheep should be tagged before turning out to grass. Dry ewes may be fattened, and marketed as soon as possible. Lambs that are for early market, will need the best of care and extra feed. The good shepherd will look well to his flock, and count it every day, so that no animal may get strayed far away and lost. The best way to kill ticks is to dip the lambs shortly after the sheep are sheared in Tobacco Water to which Sulphur is added.

Washing Sheep.—A deduction of about ¼ is made by the wool buyers for all unwashed fleeces, and this is right if the washing is properly done. Take it all in all it is best to wash the sheep, though there may be cases where it is not convenient, expedient, or even safe.

Live Stock.—Keep live stock of all kinds in a thriving condition. The change from hay to grass is critical, often resulting in loss of condition.

Crows.—These birds are in the main the farmer's friends; but at just this time when the corn is *coming up* it is hard to think so. Crows are great lovers of young corn, but for most of the year they feed on insects that are injurious. Drive them off the corn field, but it is not wise to kill them.

Machinery.—See that all haying and harvesting machines and implements are in good condition for service, that they may be ready when wanted. If any portions need replacing, procure these well in advance of the time when they will be needed for use.

Notes on Orchard and Garden Work.

Orchard and Nursery.

Planting should in general be finished before the first of May; but trees that have been carefully heeled-in may be set safely for some time to come.

Grafting can be done now, but great care is necessary. As the bark peels easily at this season it should be cut through with a knife, and the saw made to follow the cut, otherwise the bark may be peeled and a bad wound made. It is not best to remove all the buds from the stock before the graft starts, as there will then be no inducement for the sap to flow upwards. After the union of the graft is made and the buds upon it have started, all those upon the stock below should be removed, in order that the graft may have the full supply of sap.

Insects.—An increase of insect life will come with the warmer growing weather. The eggs of the

Tent Caterpillar will hatch into the "worms" which will begin at once their ravages upon the foliage. Fortunately these destructive caterpillars put up "a sign," without which they might escape notice. They pitch their "tents" at once, and though these are at first small they may be readily seen in the early morning when the dew makes them conspicuous. Take the tent when the whole family is "at home" and crush it under foot. Various devices are suggested for this, but the hand, with or without a glove, is the best. For the higher limbs a pole with a swab attached may be used.

Curculio of the plum stings the fruit while it is quite small. The trees should be jarred in early morning, beginning when they are just passing out of flower, and the sluggish beetles caught on a sheet opened beneath the tree for the purpose. Afterwards those caught on the sheet should be burned.

Borers.—Their presence is known by the sawdust they make. The only effectual method of reaching them is by probing with a wire; cutting the tree with a knife as little as may be found necessary.

Canker Worms.—Bands of stiff paper put around the trunks upon which is smeared a ring of tar or printer's ink, will keep the wingless females from ascending the trees. The bands will need new coats of tar or printer's ink now and then.

Plant Lice, which often crowd upon the growing tips of the branches of cherry and other fruit trees, are removed by syringing with tobacco water.

Thinning Fruit.—The sooner fruit is thinned after it has set, the better it is for the tree, as all growth of fruit costs effort for the tree to make and is therefore exhaustive. No one who desires the choicest fruit will fail to thin an overloaded tree.

Blight is a quick comer which gives no warning. The best that can be done is to cut away the portion "struck," down to the live wood. If the tree is badly affected it is best to remove it entirely.

Seed Beds of fruit and forest trees need close attention to keep the soil loose and the weeds from establishing themselves. The beds, especially of evergreens, will need shelter from the hot sun, which may be provided by a lattice work of laths, or brush may be used, but less convenient in weeding.

Planting in Orchards.—There is a general reluctance to give up the soil of the orchard entirely to the trees. While the orchard is young it is best to cultivate it thoroughly, and hoed crops, like potatoes, roots, etc., can be grown as a present pay for the trouble, but as the trees get older and shade the ground, nothing else but fruit should be expected from the orchard. It is a good practice to pasture hogs in the orchard in clover sown for the purpose, as it is one of the best methods of enriching the soil and at the same time destroying insects.

The Fruit Garden.

Blackberries and Raspberries may still be planted, but as they start early they should have been set before this. Stakes or trellises should be provided to which the canes are to be secured. Novices fail to understand that it is the new canes that grow this year that are to bear the fruit the next season. All suckers are to be treated as weeds unless new plants are desired, when the best ones may be saved.

Currants and Gooseberries.—Cultivate the ground thoroughly and give a good mulch a little later in the season. Watch for the "worms" which come from eggs laid upon the under side of the lower leaves, and use White Hellebore, a tablespoonful of the powder to a pailful of water. It is best to scald the Hellebore with a little hot water before adding it to the water in the pail or watering pot.

Strawberries.—Keep the soil free from weeds and mellow. So soon as the fruit is well set give the bed a mulch, which will keep the berries from the soil. Hand pull any large weeds that may appear. Set out new beds, if plants are to be had.

Grapes.—One healthy, vigorous cane upon a newly set vine is enough. Tie it up securely to a support. Vines are trained so variously that specific directions can not be given. Whatever the method of training it should keep in view and provide for the crop of next year. Generally the fruit-bearing shoots for the present year should be stopped; that is, have their further growth in length prevented, by pinching off the end of the shoot at one, two or three leaves beyond the uppermost cluster of grapes; this should be done very early, as soon as the clusters of buds (often mistaken for young grapes) and the young leaves can be distinctly seen.

Marketing Fruit.—Provide all the appliances of quick and proper marketing before the fruit is ready. So much depends upon the appearance of the fruit at the market that neatness and care in so packing it that it will show at its best, will pay. Caution should be given to the pickers that no over-ripe fruit be put into the basket or crates. If the distance to market is considerable the fruit should be in a less mature state than when the market is but a short distance away. Watch the market.

Kitchen and Market Garden.

Work is apt to come with a rush; there are so many different things to attend to, that unless the work is properly planned, much time will be lost. It happens with many who make a change of residence, that they can not begin gardening until the first of May. These have been obliged to delay the planting of those crops that should be put in so soon as the soil will permit, and will be somewhat behindhand; but with extra effort, and that at once, they may be able to get abreast with the season with most of the vegetables of the garden.

Asparagus should be cut with a strong, round-pointed knife, and with care that the neighboring younger shoots or buds may not be injured. Cut the bed clean, leaving no small shoots to grow now.

Beans.—Plant the bush sorts in drills 18 inches apart, as soon as there is no danger of frost. The Limas are not to go in until the cold rains are over and the ground well warmed. Set the poles 4 feet apart, and afterwards plant four or five beans to each pole, thrusting the seeds into the soil with the eye downward. See that the poles are firmly set.

Beets.—Thin the early sown sorts as soon as large enough; the thinnings may be used for "greens." Sow every fortnight until July, and in drills 15 inches apart. Put in Long Blood for winter use.

Cabbage.—The hoe and cultivator should keep all weeds from the early crop. Sow the seed in open ground for plants for the late crop.

Carrots.—Sow the Early Horn for early use; for the winter supply wait until the ground is warm.

Corn.—Plant so soon as the frosts are past, and continue to do so at intervals of a week or ten days, to have a supply of this excellent vegetable through the season. "Triumph" is one of the best sorts.

Cucumbers.—Plants that have been started in frames should go out, but protect them if cold nights come. Seed for later crop may be sown in the garden so soon as the ground is warm and dry.

Egg Plants.—Nothing is gained by setting plants in open ground until warm weather sets in. Push them with a good supply of rich manure. Liqnid manure may be used, and with very good results.

Lettuce.—Cultivate the early plants; set out new plants from hot-bed for snccession. Seed may now be sown in the open ground for the late crop.

Martynias.—Sow seed in hot-bed and set the plants out so scon as well started, or sow later in the open ground. Set about 3 feet each way.

Onions.—Clean culture is necessary with this crop. The soil needs frequent stirring, and hand weeding will be required in the rows.

Melons and Squashes require much the same treatment as Cucumbers. They are of the tender group of vegetables, and require a warm, dry soil at time of planting. Allow an abundance of seed to each hill.

Parsley.—Transplant from hot-bed for early, and sow seed in open ground for late crop.

Peas.—See previous month's Notes, and "Peas in Plenty," March, p. 105. Sow a succession for constant table nse. The large sorts will need brush.

Peppers.—Set out plants when the weather has become settled. A few should be iu every garden.

Potatoes.—Keep clean of weeds hy frequent hoeing and stirring the soil. Use Paris Green or London Purple for the "hugs" as soon as they appear.

Radishes will need to be sown every week or so for a succession. Dust with plaster for insects.

Salsify.—Sow this month and keep clear of weeds.

Spinach.—Keep the first crop clear of weeds, and sow every week or 10 days during the month.

Tomatoes should be put in hills 4 feet each way so soon as all danger of frosts is past. Provide some support for the plants before they fall over. A little straw or brnsh to keep the fruit from the soil may be nsed if the plants are not supported.

Turnips.—The early sowings should be kept clear of weeds, and sprinkled with lime or plaster if the Black Fly appears. Sow seed for a late crop.

Tools of all sorts required in the garden should always be in good order and at hand; this last is important, therefore have a place for every tool, and when not in use let it always be found there.

Flower Garden and Lawn.

Lawn.—A light top-dressing of some fine fertilizer should be applied. For this purpose, guano, ashes, ground bone, and nitrate of soda, are all good. Either of them may be used, at the rate of 200 pounds per acre. The best time to apply the soluble manures, like guano, and nitrate of soda, is just before a rain. If there are thin spots, sow grass seed upon them, and rake in. Lawns that are well estahlished, should be mowed once a week, and the cutting left to protect the roots from the suu. Large weeds are best removed by hand-pulling, aided by an old chisel to secure the roots.

Climbers are especially useful for decorating, and fnrnishing shade for verandas, and making screens for hiding unsightly places. Of the woody sorts, the Wistaria, Akebia, Clematis, Loniceras, etc., are among the best. If these can not be waited for, sow annuals, as Cypress Vine, Canary-Bird Flower, Morning Glories, etc., or plant Maderia Vines.

Annuals may be sown, and care should be taken to properly preserve names by using neat labels at time of planting, especially with new varieties.

Perennials should have been divided last month, as many start early. Old beds should be kept free from weeds, and the soil loose, by frequent hoeing.

Bulbs.—Lilies, and Gladioluses, may be planted early, and if a part of the Gladiolus bulbs be kept out for a month, a longer succession of flowers may be had; they should have stakes as a general thing. Cannas, which pass for bulbs, do better if not planted until the soil is thoroughly warmed.

Wild Flowers.—Those who take an interest in cultivated flowers, ean usually find a place in the garden for a collection of the prettiest of the wild flowers, and find much enjoyment in noting their time of appearance, etc. A "rock-work" is a pleasing feature in its place, which is not on a lawn.

Castor Oil Plants are so tropical in their nature, that they make a fine show, and a few of them should be introduced wherever the garden is large enough. They do best started in a hot-bed and afterwards transplanted to the warm open ground.

Greenhouse and Window Plants.

The potted plants that are to stand out of doors, should have a partly shaded place, and be provided with a thick layer of coal ashes, to prevent worms from enteriug the pots from below. The plants in the greenhouse will need shade, and this can be produced by coating the glass with white-wash. Muslin screens will answer in small houses..... Water should be freely used, and the houses provided with an abundance of fresh air.... Fuchsias will serve to decorate verandas and like places, otherwise they had best remain in the greenhouse. ....Hanging Baskets will need frequent attention, and should be plunged into a tub of water, and well soaked at least twice a week.....It is safer to keep all choice tropical plants in the greenhouse, than to run any risk with them out of doors..... Clear the house of all insects, and make any repairs necessary, while most of the plants are out.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our record kept daily during the year, show at a glance the transactions *for the month ending April 9th*, 1880, and for the corresponding period last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
23 d's *this* m'th	374,000	1,556,000	2,579,000	69,000	272,000	935,000
24 d's *last* m'th	368,000	1,251,000	2,137,000	41,000	409,000	896,000

SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
23 d's *this* m'h	338,000	23,571,000*	6,104,000*	181,000	383,000	1,918,000*
24 d's *last* m'h	305,000	24,100,000*	4,113,000*	285,000	194,000	1,314,000*

* Including sales for forward delivery.

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
23 days 1880..	374,000	1,156,000	2,579,000	69,000	272,000	935,000
26 days 1879..	413,000	3,457,000	2,916,000	314,000	207,000	811,000

SALES.	*Flour.*	*Wheat.*	*Corn*	*Rye.*	*Barley.*	*Oats.*
23 days 1880..	338,000	23,571,000	6,101 000	181,000	383,000	1,918,000
26 days 1879	395,000	8,431,000	5,687,000	439,000	291,000	1,213,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush
Apr. 6, 1880..	3,430,747	894,236	66,497	230,957	368,481	135,996
Apr. 8, 1879..	2,629,068	804,584	403,238	432,832	650,308	85,577
Apr. 10, 1878..	1,370,081	541,648	106,375	396,861	857,273	253,424

4. *Exports from New York, Jan. 1 to April 9.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
1880..	761,600	9,150,000	7,840,000	521,000	196,000	49,000	98,000
1879..	824,409	10,708,000	7,694,500	850,700	68,710	85,200	142,850
1878..	770,100	12,898,746	5,232,029	974,966	1,153,912	85,564	145,351
1877..	373,057	2,873,510	5,678,140	851,280	121,229	53,125	117,069
1876..	569,514	4,994,177	3,668,928	43,320	——	63,894	258,251

A close Money market, continued activity in Stocks, Produce, and Merchandise, and more or less frequent and wide fluctuations in values received have been the notable features of business since our last review....A buoyant market has been noted in Real Estate, which has been in much more favor with buyers for investment purposes....Dry Goods, Boots, and Shoes, Hardware, and Leather have been in fair demand, and quoted generally firm. Hides, Skins, and Rice have attracted more attention at stronger rates. Naval Stores, Drugs, and Dyes, Fish, Fruit, Hemp, Sugars, Coffee, Teas, and Molasses have been in less urgent request, and have been somewhat unsettled, though leaving off without important changes....A brisk movement has been again reported in Cotton, the bulk of the dealings having been in the option line, but at reduced quotations....Wool has been ruling in favor of holders, who have been reserved in their offerings of stock, especially of domestic product, while the inquiry for supplies has been good....Hops have recently met with a rather more urgent call, chiefly for home trade account, and the better qualities have been held with more confidence, as the offerings have been materially reduced... Hay and Straw have been in fair demand at about former figures....Seeds have been much depressed and quite irregular, on a very moderate inquiry, even from home trade sources....Metals have been much less sought after, and have been quoted generally lower....Provisions have been moderately active, but variable, closing, as a rule, weaker....More liberal receipts and offerings, increased urgency on the part of holders to realize, rather less satisfactory advices by Cable, and a sharp rise in ocean freights worked decidedly against nearly all kinds of Breadstuffs, which declined seriously on an unsettled and sensitive market--Flour, Wheat, and Corn showing most depression and irregularity—on free dealings in Wheat and Corn for prompt and forward delivery—in Wheat, chiefly in the way of options, and in Corn, mainly for prompt delivery. A moderate movement has been reported in Flour and Rye, at current quotations. Oats have been quite brisk, and recently buoyant in price—due partly to the requirements of speculative operators to provide for maturing contracts—but closed in favor of buyers. Barley has been exceptionably firm, with the better qualities in comparatively light supply and wanted. The recent export clearances of Grain from the Atlantic seaboard ports have been of unusual magnitude as well of Wheat, as Corn, the shipments of which latter, within the past week, reached over 3½ million bushels. Favorable weather, and encouraging crop reports have been adverse in their bearing on values in the European as well as in the domestic markets. The stocks of grain in store in New York harbor are steadily diminishing. The visible supplies of Wheat—embracing the hoards at lake ports, in transit, and on the seaboard—at latest dates, embraced about 24,227,000 bushels;—of Corn, 16,541,000 bushels; of Rye, 680,500 bushels; of Barley, 2,228,000 bushels, and of Oats, 2,944,000 bushels, against on January 31, an aggregate of 30,100,000 bushels Wheat, 13,100,000 bushels Corn, 979,000 bushels Rye, 4,155,000 bushels Barley, and 3,080,000 bushels Oats. Ocean grain freights were advanced materially on an active demand from the grain interest, but closed easier and comparatively tame, including by steam to Liverpool 6½@7½*d.* per bushel; to Bristol, by steam, to 8*d.* per bushel; to Antwerp by steam, to 8*d.* per bushel, and by sail to Cork, for orders for vessels of average carrying capacity—say 3,000 to 4,000 qrs.—4@5*s.* having been as high as 5*s.* 4½*d.*@5*s.* 6*d.* per quarter of 480 lbs.

CURRENT WHOLESALE PRICES.

	Mar. 13.	Apr. 12.
FLOUR—Super to Extra State	$4 65 @ 5 75	$3 90 @ 5 40
" Super to Extra South'n.	4 65 @ 8 25	3 90 @ 8 00
" Extra Genesee..........	5 75 @ 7 00	5 40 @ 6 75
" Superfine Western.....	4 65 @ 5 30	3 90 @ 4 75
" Extra Western	5 30 @ 9 00	4 85 @ 8 75
" " Minnesota.......	5 50 @ 9 00	4 85 @ 8 50
BUCKWHEAT FLOUR, ℔ 100 lbs	1 30 @ 1 75	Nominal.
BUCKWHEAT, per bush	55 @ —	Nominal.
RYE FLOUR, Superfine.......	4 70 @ 5 15	4 50 @ 5 10
CORN-MEAL.	2 50 @ 3 30	2 50 @ 3 20
CORN-FLOUR, per bbl........	3 75 @ 4 50	3 75 @ 4 25
OAT MEAL, ℔ bbl............	5 00 @ 7 00	4 50 @ 6 75
WHEAT—All kinds of White.	1 35 @ 1 45	1 30 @ 1 36½
" Red and Amber.....	1 15 @ 1 46	1 15 @ 1 40
" Spring...............	1 20 @ 1 45	1 10 @ 1 32
CORN—Yellow	60 @ 68	55 @ 57
" White...................	61 @ 68	56 @ 58
" Mixed	59 @ 65	53½@ 55
OATS.......................	46 @ 54	41 @ 49
RYE	98 @ 97½	87 @ 91
BARLEY	55 @ 1 05	55 @ 1 06
HAY—Bale, ℔ 100 lbs.........	65 @ 95	65 @ 90
STRAW, ℔ 100 lbs............	45 @ 1 00	45 @ 1 00
COTTON—Middlings, ℔ lb....	13⅝@ 13¼	12⅜@ 13½
HOPS—Crop of 1879, ℔ lb	27 @ 38	27 @ 40
" " 1878, ℔ lb	7 @ 20	7 @ 18
" olds, ℔ lb............	4 @ 12	4 @ 12
FEATHERS—Live Geese, ℔ lb	40 @ 55	40 @ 55
SEED—Clover, West. & St.℔ lb	7½@ 10½	5½@ 7¾
" Timothy, ℔ bushel	2 90 @ 3 05	2 75 @ 3 00
" Flax, ℔ bushel..........	1 75 @ 1 80	1 75 @ 1 80
TOBACCO, Kentucky, &c., ℔ lb.	3½@ 14½	3 @ 14
" Seed Leaf, ℔ lb	— @ —	6 @ 40
WOOL—Domestic Fleece, ℔ lb	32 @ 58	32 @ 60
" Domestic, pulled, ℔ lb..	19 @ 56	20 @ 57
" California	17 @ 44	18 @ 45
TALLOW, ℔ lb	6⅜@ 6¼	6⅛@ 6¼
OIL-CAKE—℔ ton	31 50 @32 25	29 00 @30 25
PORK—Mess, ℔ barrel	11 75 @12 50	11 50 @11 65
" Extra Prime, ℔ barrel..	10 00 @10 50	— @ —
BEEF—Extra mess..........	11 00 @12 00	11 00 @12 00
LARD, in trcs. & bbls, ℔ 100 lb	7 65 @ 8 05	7 50 @ 7 90
BUTTER—State, ℔ lb..........	18 @ 37	20 @ 33
" Western, poor to f'cy, lb.	14 @ 37	11 @ 31
CHEESE..	11 @ 14½	9 @ 14½
EGGS—Fresh, ℔ dozen	11 @ 14½	9½@ 12½
POULTRY—Fowls, ℔ lb........	6 @ 13	5 @ 13
" Chickens, ℔ lb...........	6 @ 20	7 @ 22
" Roosters, ℔ lb...........	5 @ 6	4 @ 5
Capons, ℔ lb..	15 @ 21	16 @ 23
Turkeys—℔ lb................	8 @ 14	10 @ 15
Geese, ℔ pair......	1 00 @ 1 75	75 @ 1 50
Geese, ℔ lb...	8 @ 12	10 @ 12
Ducks, ℔ pair............	50 @ 80	50 @ 80
" ℔ lb..................	10 @ 15	10 @ 16
DUCKS, Wild, ℔ pair..........	20 @ 2 00	25 @ 2 00
PIGEONS, ℔ dozen......	40 @ 3 25	1 05 @ 3 75
ENGLISH SNIPE, ℔ dozen....	4 00 @ 4 50	1 00 @ 1 25
APPLES, ℔ barrel............	2 25 @ 3 25	2 00 @ 4 50
STRAWBERRIES, new So., ℔ qt.	20 @ 50	15 @ 30
POTATOES, new, per bbl.....	5 50 @ 6 00	4 00 @ 8 00
" ℔ bbl...............	1 00 @ 2 00	1 00 @ 2 00
" Sweet, lb bbl........	2 75 @ 3 00	3 00 @ 3 50
TOMATOES, new, per box....	50 @ 1 00	50 @ 1 00
TURNIPS ℔ bbl	75 @ 1 00	62 @ 75
BEANS—℔ bushel.......	1 35 @ 1 80	1 30 @ 2 00
PEAS—Canada, in bond, ℔ bu	— @ 85	— @ —
" new, green, ℔ bag..	1 75 @ 1 80	— @ 1 80
" new, South'n, per crate	1 00 @ 3 00	1 50 @ 2 60
STRING BEANS, nw, Flor..p.c	— @ —	2 00 @ 3 00
CARROTS, ℔ bbl..	75 @ 1 25	1 00 @ 1 50
BEETS, ℔ 100 bunches.........	1 00 @ 1 25	1 25 @ 1 75
" new Bermuda, per crate	— @ 1 50	— @ 1 50
CABBAGES—℔ 100	4 00 @ 9 00	5 00 @10 00
" new, ℔ bbl........	— @ —	8 00 @ 3 50
ONIONS—℔ bbl.......	2 75 @ 4 50	2 75 @ 6 00
CRANBERRIES, per crate. ...	7 00 @10 00	3 50 @ 4 00
SQUASH, ℔ bbl................	1 75 @ 2 75	1 50 @ 2 75
CELERY, per dozen bunches.	2 00 @ 3 00	— @ —
SPINACH, ℔ bbl................	1 25 @ 2 50	1 00 @ 2 50
ASPARAGUS, new, ℔ doz. bun	— @ —	5 00 @ 9 00
RADISHES, new ℔ 100 bun....	— @ —	50 @ 1 25
CUCUMBERS, ℔ 100............	— @ —	2 00 @ 6 00

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Mar. 15	14,214	234	1,429	29,483	29,780
Mar. 22................	12,997	207	1,898	25,572	32,454
Mar. 29................	11,270	137	1,727	25,119	32,086
Apr. 5................	11,865	146	2,741	25,760	32,053
Total for 4 *Weeks*..	50,366	724	7,895	105,935	126,373
do. *for prev.* 4 *Weeks*	41,770	831	3,825	93,477	124,748

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week.......	12,591	181	1,974	26,484	31,593
do. do. *last Month* ..	10,442	208	956	23,369	31,182
do. do. *prev's Month*..	11,913	197	1,059	32,300	34,223

Prices for beeves the past four weeks were as follows:

WEEK ENDING	Range.	Larger Sales.	Aver.
Mar. 15	8 @11¾c.	9¼@10 c.	9⅜c.
Mar. 22	7 @11 c.	9 @10 c.	9⅝c.
Mar. 29	7½@11¾c.	9 @10 c.	9⅝c.
Apr. 5	7 @11 c.	8¾@ 9¾c.	9¼c.

Beeves.—The average receipts for the past four weeks, have been a considerable above those of previous months. During the first week, there was a good home demand, with a fair foreign call, thus making the market active, and prices good. The second week was remarkably dull, in marked contrast with the one preceding it, but the prices have held good up to the time of going to press. The first week in April found the markets too liberally supplied, and much money has been lost by Shippers. Oxen sold as low as 3⅝c. live weight, while Choice and Extra Steers to dress 57, sold at 10¼ to 11c. ....**Milch Cows.**—The demand rather moderate for fresh milkers, the market remaining quiet and about the same for the four weeks. From $30 to $55, represents most of the sales, the latter being choice stock for family use.....**Calves.**—The supply has been liberal, demand very moderate, and the market dull. There was a falling off at the close of the month. Mixed lots sold for 4@4½c., and common to prime veals, at 4½@7c.....**Sheep and Lambs.**—The month opened with good prices and considerable demand, which was soon answered by a full supply, when the market fell, and remained so for a week, with little rise for the last fortnight. Common lambs felt the decline more than sheep. The sheep sold in most part at from 5⅜ to 7c.; extra wethers at 7¼c., and a small lot of selected sheep at 7½c. ....**Hogs.**—The month opened steady, and closed moderately firm, with ¼c. advance. Common and Prime Hogs, quoted at $4.75@$5.12—Average for the month about $4.60.

The Horse Market.—Last year was the best in the Horse Market for the past five years, but the indications are that the one just opened, will be better than the last. Common work horses are selling at $80@$150 ℔ head.—Street car horses are bringing $110@$135—Those animals fitted for carriage horses, have brought as high as $250, and heavy cart and dray horses about the same.

Prices of Feed.

Cotton-seed meal,	per ton.	$30.00
Linseed-cake meal	"	37.50
Middlings	"	24.00
Bran	"	23.00
Corn-meal	"	23.00

Prices of Fertilizers.

Nitrate of Potash (95 per cent.), per lb.	9 @9½c.
Sulphate of Potash (potash 41 per cent) per lb.	3½@4 c.
do. do. (potash 27½ per cent) per lb.	1½@1¾c.
German Potash Salts (potash 12 to 15 p.c.) p. ton.	$15.00@18.00
Muriate of Potash (potash 50 per cent), per lb.	2 @2¼c.
Nitrate of Soda, per lb.	5@5¼c.
Sulphate of Ammonia (25 per cent.), per lb.	4¼c.@4½c.
Dried Blood (ammonia 13 per cent) per ton	$40.00@45.00
No. 1. Peruv. Guano 10 p. ct. ammonia, standard, ℔ ton.	$55.00
do. do. Lobos, do. do. do.	46.00
do. do. guaranteed, ℔ ton, cargo K	56.00
Soluble Pacific Guano, ℔ ton	45.00
Excelsior Fertilizer Works, Fine Ground Raw Bone,	55.00
Mapes' Complete Manure (clay soils) per 1,000 lbs.	25.50
do. do. do. (light soils) per 1,000 lbs.	25.50
do. do. do. "A" Brand, (wheat) ℔ 1,000 lbs.	20.00
do. Corn Manure, per ton	49.00
do. Beet do. do.	49.00
do. Cabbage do. do.	47.50
do. Tobacco do. do.	52.00
do. Fruit and Vine Manure, per ton	37.00
Stockbridge Rye Manure, do.	45.00
" Wheat do. do.	45.00
" Seeding Down Manure, do.	40.00
Bowker's Wheat Phosphate, per ton.	40.00
Baugh's Raw Bone Phosphate, per ton	33.00
Baugh's Manure for Tobacco and Grain, per ton	45.00
Walton, Whann & Co.'s Raw Bone Phosphate	40.00
Gypsum, Nova Scotia, ground, per ton	7.50

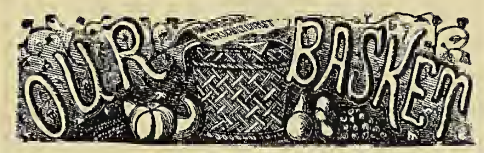
DON'T FORGET
THE PREMIUMS.
2
Months More.

Two Months Yet Remain, May and June, during which *any* person who wishes can obtain one or more of the useful and valuable articles offered in our Premium List (of which a copy will be sent free to any applicant not having one). They are easily secured. This has already been done by more than **25,000** persons, who during years past have tried with success the raising of Clubs of Subscribers for our paper, and availed themselves of the liberal offers of Premiums made by the Publishers.

We invite **all** our Subscribers to take hold of this work and secure a Premium while the offer is open. Specimen copies of English or German editions will be sent to any wishing to show them for this purpose.

Premium Clubs already started can be filled up. And there is plenty of time to start **new Clubs** and complete them.

Spring Work is opening, and multitudes will now feel the need of the help, the hints and suggestions given by practical men in the pages of the *American Agriculturist.* They only need some one to present the paper to them and take their Subscriptions. The Premiums will well *pay* those who do this for their trouble.



containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

What This Number Contains:

Most of our readers are too busy, just now, to at once go through the hundred and fifty or more articles and items of this paper—each one doubtless worth reading. All will first turn to

Hints for the Work of the Month. on pages 172–3–4, as suggestions from practical men are scattered through those pages. Bee men will look at page 178.

Corn, our great national crop, comes to the front this month. Prof. Atwater's results of experiments, and the value of corn as a renovating crop, pages 180, 181. will be carefully studied, with profit. See "Basket Item" on Corn, page 178.

Dairy Matters are treated at length, and variously, on pages 184–5. A famous cow is described on page 183.

A Cottage or House for the Country, costing $1,800. on page 182, will interest many, especially as the detailed specifications are given.

Humbugs of various "species" have their "Gallery" on pages 176–7.

The Hints and Helps to Farmers under several heads, on pages 186–7–8–9, can scarcely fail to supply some useful hint, in one way or another, to every reader

Fences and Fencing, on pages 179–80, give a few readers' experiences in their own words.

"The Department of Agriculture" will scarcely enjoy the exposé, on page 190, but many of our readers will.

Some Newer Grapes, pages 190–1. and the Great Grape Enemy, pages 192–3, will be found very interesting by many readers.

Housekeepers are not forgotten, as witness pages 194–5.

The Boys and Girls will find things useful, things puzzling, etc., on page 196–7–8.

The "Basket" abounds in condensed items in two places, on pages 175–6–7–8–9, and over on pages 203–4–5.

Where to Get Things Wanted.—Many *thousands* of letters come to the Editors every year (some with and some without "return postage"), asking where they can obtain from trustworthy parties, implements, animals, poultry, seeds, plants, fertilizers, and a great variety of other things, all of which questions we try to answer when we can. But nine out of ten of these letters, and much valuable time of both writers and respondents, would be saved. If the inquirers would take the little trouble required to just look through the advertising columns, where usually, in one number or another, several parties announce the very things asked about. We try to keep out all parties not trustworthy. If any mistake occurs, after all possible care, we can only acknowledge to having been deceived, *for we do not admit any advertisers whom we would not ourselves patronize when wanting the things they offer.* (The Editors have the "veto power" over any and every advertisement proposed for these columns) It will always pay to read through the business columns to see what is offered and by whom, and useful hints are often derived from reading what others say and how they say it. New ideas are thus started up in one's mind.—When corresponding with any of our advertisers, or sending for catalogues, etc., it is well to state that you are a reader of *this* Journal. They will know what *we* expect, and what *you* expect of them as to prompt and fair treatment.

The Sugar Beet, by Lewis S. Ware, C. E. M. E., etc., Philadelphia, Henry Carey Baird & Co. Just as we go to press the work with the above title comes to our notice. At no former time has the Beet Sugar interest in this country been so full of promise. It appears as if the period of costly failures had passed. The few establishments now at work though small are successful, which is more than could have been said at any former time. There is probably nothing more certain in the future of American agriculture, than that it shall supply the country with sugar. Whether this is to come from the Beet, from Indian Corn or from some variety of Sorghum already or yet to be produced, we do not undertake to say, or whether the consummation will take place in 10, 50 or 100 years, matters not: it is bound to come—and the sooner the better for both the country and the farmers. Hence we look with special interest upon any thing that tends to increase the knowledge of sugar-yielding plants, a purpose which this work is admirably calculated to serve. Though we have had no time to read the work, we can see that it is marked throughout by thoroughness and competent knowledge. It is not a work upon sugar making, but upon the Beet itself in all its relations; its composition, varieties, culture, enemies, harvesting, storing, the uses of the root itself and the waste products from the factory, the pulp, for feeding. In fact, all that can be said about the beet that the grower need know is given here, and illustrated liberally and handsomely. It is not a reproduction of a foreign work—though foreign authorities are quoted when desirable—but a large share of the matter is from the author's own experience. Sent from this office, post paid for $4.00.

Keeping one Cow—The Prize Essay.—On account of the large number of essays (over **70**) and their fullness, it has been found impossible for the judges to make a report in time to announce the prizes this month, and we are obliged to wait until our next issue, in which we expect to print the one awarded the first premium. This will doubtless alone be worth more than a whole year's subscription to the hundred of thousands of people who keep one or more cows.

Feeding for Milk When Dry.—A cow should be as well fed while dry as when giving milk. She should now increase in flesh, so that she may be able to give a greater flow of milk when milking time comes. To feed a dry cow the poor hay, or even think that straw is good enough, is poor policy, and the loss will show itself in the milk pail. Feed the cows well all the time.

Oleomargarine—What it is and What it is Not.—When Oleomargarine was first manufactured we described the process. but that was some years ago. Recent inquiries make it necessary to say something more about it. Prepared beef suet, the membranes, etc., removed, is churned with milk to give it the flavor of butter, is colored and salted—that is what it is—beef-fat prepared to look and taste like butter. It has not the mechanical texture of or the chemical composition of, and is in no respect, butter. So far as it is sold as butter it is a miserable fraud. The makers claim that it is as good as any butter and much better than a large share of the butter sold. That is a point with which we have nothing to do. It is *not* butter, as that is a product of the cow, obtained through the medium of the milk, and contains several constituents that the fat of the cow does not and which can not be added. Several of the States have passed laws directing that all the packages of Oleomargarine shall be distinctly marked with the word in letters of a given size. This is well, so far as it goes, but does not prevent the retailer from serving it as butter. As oleomargarine can be made at a much less cost than butter can be produced, the sale of it as butter is injurious to the dairy interest, and every dairyman and every farmer is interested in preventing its sale as butter, and to this end a petition is being circulated for signatures asking Congress by a general law to place restrictions upon its manufacture and sale. But the capitalists who have money invested in the manufacture of Oleomargarine are not idle. They have invited the Committee on Agriculture of Congress to visit their factory; they have also invited a number of prominent chemists to do the same; their guests have been steamboated and dined and we suppose wined, all after the approved fashion. We do not know what the effect will be upon the Congressmen, but we are very sure that the chemists will say, as they might have said before—"Gentlemen, your stuff is not injurious, it is as healthy as beef-fat need be, we see no objections if people wish beef-fat with their bread, why they should not buy yours, but it is not butter and no amount of steamboat or banquet can make us say that it is."—We see no reason why colored and salted beef-fat or colored and salted hog's lard, or purified and salted palm oil should not be eaten if one's taste runs that way. but they should not be sold as butter or given out to one who asks for butter, and the penalty to one who does it should be most severe. We notice of late a disposition to change the name of the stuff to Butterine—no, gentlemen! you chose your own name at the beginning. Oleomargarine is quite a pretty name and as distinct from *butter* as the stuff itself, and we do not wish a name that may lead to the confounding of two very distinct articles. Butter can stand on its own merits, with its own name; let your stuff do the same, and may there may be laws enough to make you do it.

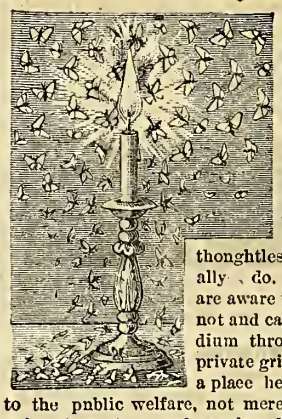
Silica in Plants.—Silica (or sand) has long been considered an essential constituent of plants, especially the cereals like wheat and oats, in which it was held indispensable to give the straw the proper strength to hold up the heavy, well filled heads. The conclusions stated in the Annual Report of the Connecticut Agricultural Experimental Station of 1879, show that the value and importance of Silica in plant nutrition, have been greatly overestimated. The Report says: "1. It has been conclusively shown that the strength of straw does not depend upon the Silica in it, but on the vegetable substance itself. Rapid growth produces, in presence of abundant Silica, a comparatively loose and weak cell tissue. Slow growth, on the other hand, yields in practically total absence of Silica, firm and close textured stems. Again, no fertilizing experiments in which soluble Silica has been supplied, have shown any benefit from the Silica. Finally, there is no element so abundant in all soils, and none whose access to crops is so impossible to avoid. 2. Numerous most careful trials on the growth of plants under circumstances where Silica has not and could not, be supplied by them, except in most minute quantities, have demonstrated beyond all question that Silica is not necessary to the nutrition or complete development of agricultural plants."

Chicken Cholera.—The Georgia State Agricultural Society, in answer to the offer of a reward for the best remedy for chicken cholera, received the following, which is of course claimed to be a *sure cure*. "Gather one bushel of Smart-weed and put it into a large-sized kettle, adding 10 gallons of water. Boil down to three gallons and mix this liquor with meal in proportion of one pint to three gallons of meal, and feed the same to 200 chickens twice a day until disease disappears and then give no more for a week. To keep the disease away give every other day." We give the above for what it is worth, and have no doubt it is quite as valuable as any of the secret remedies now offered. The one who proposes the remedy claims that previous to using this decoction he lost 800 chickens, but none since its use, which is as much entitled to consideration as the claim of secret stuffs to be *perfect cures*. We take it that by "Smartweed," one of the acrid *Polygonums*, is intended. Two species of *Polygonum*, *P. Hydropiper* and *P. acre*, are found in moist ground in nearly all parts of the country. These are known as "Smart-weed," "Water-Pepper," and "Biting Knot-weed." They have a very acrid juice, which irritates and even blisters the skin if applied where that is tender, and has a most pungent, biting taste. Some species resembling these are without this property.

Winter in Dakota.—A friend, who is stationed at a post in the Northwestern portion of the Territory, writes in a private letter: "We have had a rigorous winter, lasting from the latter part of October until past the middle of March. For weeks at a time the thermometer never got above zero, but it did one day reach to 51 *below*. Of course the mercurial thermometer never told us that, it was resting about that time. [Referring to the fact that mercury freezes at about 39°—ED]. For six weeks we were without mails on account of the heavy snows that completely blockaded the roads. We had storm after storm, such as you in the East never dreamed of, and which pen cannot paint. Yet the weather is glorious! A clear, bracing air that makes it a pleasure to live in it. Zero weather we consider warm, and hardly worth while to put on wraps in going short distances. Of course this refers to quiet weather. A wind alters the case materially. Most of us wore buckskin pantaloons after the manner of the Indians, buffalo overcoats, fur caps and gloves or fur mittens. In very cold weather boots and arctics were unwearable, and boots made of buffalo robe with the fur inside were the only articles for possibly keeping the feet warm. I must, on second thoughts, make an exception, as German socks and *loose* arctics could be worn. I adopted the former, however, as did the majority. At present writing (March 28th), the Missouri river is still stationary. Ice four feet thick and as clear as a crystal, though in summer the Missouri is the muddiest river, without exception, I ever saw."—Ice four feet thick! and in the East an impending ice famine!

Balky Horses.—Among the suggestions said to be published by some Anti-cruelty to Animals Society, are these: If the horse when he balks, can have his attention diverted there is usually no trouble in starting him. This may be done in various ways of which the following are a few that have been employed: Take the horse out of the shafts and turn him around several times quite rapidly. This will make him entirely dizzy and lead him to forget that he does not wish to draw the load. A stout twine twisted around the fore-leg has been used as a remedy with good results. A string tied around the ear has the same effect. We have seen horses of the balkiest sort started in a moment by putting a lump of earth into their mouths. Even a piece of sugar or a handful of fresh grass will so divert the attention of a balker that he will often start off without trouble. Some mild treatment like these that set the animal to thinking of something foreign to his work is vastly better than any amount of whipping, and is much easier of application.

Sundry Humbugs.



Every now and then a letter shows that all do not understand the rules that govern the conduct of these columns. It is a mere waste of paper and postage to write a request to "denounce so and so in your Humbug Column," as some thoughtless persons occasionally do. Our older readers are aware that these columns are not and cannot be made the medium through which to redress private grievances. One to merit a place here must be an enemy to the public welfare, not merely suspected of wrong doing, but the proofs against him must be such as would convince any fair minded man that the good of the community requires his exposure. There are—and more's the pity—quite as many of this kind as we care to occupy ourselves with. The publisher of a country newspaper writes: "Dear Sir, Please denounce X. X. X., of Cincinnati, O.," who advertised some gimcrack in his paper and did not pay. If we were to set up as denouncers of all who do not pay for advertising we should be obliged to issue a large supplement. We find that requests like the above, as in this case, generally end with

"PLEASE OMIT MY NAME."

This person expects us, upon his bare request to give one we never before heard of the bad eminence of a place here, and is even unwilling to appear as accuser. No we thank you. We are not in that business just now.

With the spring, when snakes and other creeping things come out of their holes, those sharpers appear who

HAVE DESIGNS UPON FARMERS.

Where these fellows come from, and where they stay when not going about the farming districts is a mystery—but soon after the skunk cabbage blossoms these are sure to appear, whether in person or through advertisements, offering one thing or another, but all having the same aim—the farmer's pocket. Sometimes it is

WONDERFUL SEEDS AND PLANTS.

It is safe to assume that any seed or plant offered by traveling venders or agents as something new or of a kind not to be had elsewhere, is a fraud. Valuable new things are not introduced in this manner. Tennessee is a wonderful State in many respects, and the seeds that are advertised by parties in that State are—to say the least, remarkable; so much so that we advise our readers to let some one else try them....Beware of those chaps who come about with "rights" for sale, or some implement or affair for which they would make you "sole agent" for the township. A farmer who properly attends to his farm has no time to bother with selling somebody's Mowing Machine Knife Sharpeners or anybody's Patent Spring Bed. Besides this, nearly all

THE SWINDLES UPON FARMERS

through the medium of notes fraudulently obtained, that have come to our knowledge, would have been avoided, had the farmers refused to have anything to do with matters outside of their proper calling. Being tempted by the idea of making money through the sale of articles of which they knew nothing, they have had to pay notes which they signed while thinking that they put their names to an order for goods. So generally are they swindled, that the farmer's only safety is in refusing to buy any machine, implement, or other article, of any traveling agent whatever. There is nothing needed on the farm that may not be bought of dealers, who have a fixed habitation and can be found when wanted.

THE TREMONT SPOON CO.

of Boston has come to grief. We noticed its offer last month, and now have to record the fact that the Postmaster General, being convinced that they were using the mails for fraudulent purposes, has issued orders to the Boston Postmaster to deliver no more letters to the men of spoons. Hardhearted Postmaster General! There are other concerns that need looking after, including a Gold Ring Shop in Philadelphia....The sellers of recipes for making

ILLUMINATING OILS

appear to be active, especially in Nebraska and others of the newer States, and the many letters of inquiry make it necessary to repeat our caution against them. They claim that their recipe will allow an illuminating oil to be made at less than half the price of kerosene, and one that will not explode. As a proof of its safety the chaps have a sample of the oil which they show will extinguish a burning match. We have seen none of these recipes that did not direct the use of Benzine, which is mixed with various useless articles as a blind, and in some cases it is asserted that these remove its dangerous qualities. Benzine is very cheap, but it is very dangerous, and *nothing whatever* can be mixed with it that will make it safe. It does not of *itself* explode, but its vapor mixed with air will—and murderously. The matter is of such serious importance as to warrant our repeated warnings, for it is not too much to say that it is

A MATTER OF LIFE AND DEATH.

Let no considerations of cheapness; let no assurance that any admixture will alter its nature; let no claim that anybody's lamp or any patent burner will make it safe, induce you to have, keep, and much less burn Benzine. Benzine is benzine and is really more dangerous to have in the house than gun-powder—because every one knows the danger of that and is cautious. Good kerosene is cheap enough; if that can not be afforded, rather go to bed at dark than to use benzine in the lamps.

ANOTHER STUMP DESTROYER.

Last autumn we gave an account of the wonderful "Stumps Removed" of one Horton, William V. (by the way, what has become of William, "Willie we have missed you"), that took two nails, a wire, and some of the powder, and the rest was left to electricity. There is a chap going through the Southern States—stumping the country so the speak, with an "exterminator" that beats Horton's all "out of sight." It is Wm. F. Buchanans' "Lightning Sprout and Timber Exterminator." You bore a hole, put in a spoonful—and away goes your tree—that is "within six or twelve months," quite long enough for the seller to get well out of the way. No nails—no wire, nothing but a hole and the "exterminator." We are left in doubt as to what it is, but as a spoonful is used it must be a powder or a liquid. It is called "Lightning," but if 6 to 12 months is Buchanan's idea of lightning, we prefer Horton's electricity, which did it in two or three....The mention of lightning and electricity as applied to trees and stumps suggests

THE WAR OF THE BATTERIES.

Elias still sends out his affidavit that there "ain't no sich pusson" as Prof. J. C. Boyd, while we have every reason to believe there is such a person, for have we not his circulars, and is not his name upon them? And he calls himself a Professor, and he does *profess* at a remarkable rate. One correspondent writes that he would expect a piece "cut from the end of an ear of corn" to do as much good as one of these batteries, and he is right. It is a remarkable illustration of the power of the imagination that people who wear these things think they perceive an effect from them. It is utterly absurd to suppose that wearing any combination of metals that may be put together in the form of a medal can send any electricity *into* the body. These batteries and the claims made for them show an entire lack of knowledge of the most elementary laws of electricity. Of the two we like Boyd's the best, as he, in explaining his battery, says: "That the various blocks of metal were so placed that when the electricity was formed it would be formed *in gimlet shape*," and that it would "*pass on twisting*." If we are to have electricity, let it be by all means of the "doubled and twisted" sort. The eccentric Rafinesque once sent a paper to "Silliman's Journal," describing 15 species of lightning. Had he lived in Boyd's time he could have added the "gimlet-pointed," and thus made 16 species. But these New York Batteries must step aside, and

MAKE ROOM FOR A BOSTON BATTERY.

Here comes Doct. Dye, who unites with his battery an absorption pad. Electricity sends disease out of the body and the pad absorbs it before it can go back again. But we can't help thinking what a dangerous thing that pad must be after it has gone absorbing for a while. As the same circular informs us: "It will not wear out," and as we are given nearly the whole catalogue of diseases which it will absorb, we think that the Boards of Health should look after these old pads... One of the frauds recently brought to our notice, is an "Artificial Ear Drum." The sender should give us his name (not for publication), and also that of the seller of the "Ear Drums"... Here are several letters from evidently intelligent writers, either making inquiry about, or sending to us as something new, the circular of

THE "REV." JOSEPH T. INMAN AND HIS RECIPE.

So far from being new, he is one of the oldest of humbugs. Looking back in our files, we find the first mention of Joseph in November, 1861. How much earlier he began his career we can not say. During all these 16 years we have many times exposed his trick, and at this late day the necessity seems as great as ever. If the fellow ever had a right to the title, Reverend, he has long ago lost it, for he works by trickery, and his circular is a printed lie. These are plain words, but they best express our meaning. His little advertisement of only 7 lines

appears in almost every paper; even those journals that profess to discriminate in advertisements, probably deceived by the "Reverend" part, publish this. It offers "to all who are suffering from the errors," etc., of youth, "a recipe that will cure you FREE OF CHARGE." Of course this is a very taking offer, to be cured and "free of charge" meets the ease of a vast number. The applicants for the "recipe" receive a four page circular, which gives the personal history of Rev. Joseph, and tells how he was cured by what he calls the "Corrassa Compound." The "Recipe" we give once more:

EXTRACT OF CORRASSA APIMIS.....Eight Drachms.
EXTRACT OF SELARMO UMBELIFERA.....Four Drachms.
POWDERED ALKERMES LATIFOLIA.....Three Drachms.
EXTRACT OF CARSADOC HERBALIS.. .....Six Drachms.

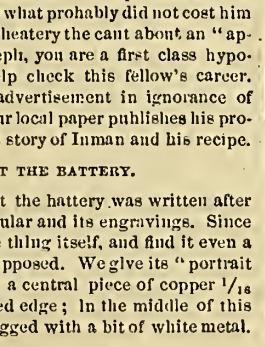
Then follow directions to mix it and to keep it well covered, and for taking it. The recipient of this recipe if he takes it to an apothecary, will be told that they have no such articles; he will learn the same story at the next drug store, and so on. If he applies to a competent and educated apothecary he will learn that there are no such articles, that the wonderful recipe is nothing but a useless

MEDLEY OF BOGUS NAMES,

made up to appear like scientific names, and badly done at that. These names stand for no drug known in pharmacy or medicine, and for no plants known to botanical, or other science. If the disappointed holder of the "Recipe" reads the circular more carefully, he will find that his trouble has been anticipated. He will read on page 3. "As the drug stores can not be relied upon to procure new remedies of pure quality [the scamp!], I can forward the CORRASSA COMPOUND in packages, ready for use (put up safe from observation), to those who need it, at the price which it costs me [Hear him]. My means make me independent. I seek no other reward for sending the remedy than the satisfaction of doing good, and the blessing of an approving conscience" [Good boy!]. We read further: "The cost of each package (including the Government stamp) is Three Dollars and Thirty Cents ($3.30), [nothing like being particular, that 30 cents gives a charming air of accuracy.] The postage is twenty-one cents. The price then of one package, sent by mail to any address, is Three Dollars and Fifty Cents ($3.50)." All the rest is unimportant. The "Free of Charge" according to the Reverend Joseph T. Inman is $3.50. This is his trick, a very mean one it is, as it is nothing more nor less than obtaining money under false pretenses. The fellow advertises to send a recipe free of charge—he sends a recipe which is a printed lie. He *knows* that the unfortunate can't get his stuff, offers to provide it at a rousing big price—for $3.30 what probably did not cost him 30 cents—and adds to his cheatery the cant about an "approving concience." Joseph, you are a first class hypocrite. Our friends can help check this fellow's career. Many papers publish his advertisement in ignorance of these facts. Wherever your local paper publishes his proposal, show the editor this story of Inman and his recipe.

MORE ABOUT THE BATTERY.

What is said above about the battery was written after an examination of the circular and its engravings. Since then we have procured the thing itself, and find it even a worse fraud than at first supposed. We give its "portrait life-size." It consists of a central piece of copper 1/16 inch thick, with a scolloped edge; in the middle of this piece is a circular hole plugged with a bit of white metal. Around this copper center are small metal discs of two sizes and of three kinds, arranged as shown in the engraving, where the dark portions indicate copper, the shaded ones brass, while the light portions are of some white metal—but not having a blow-pipe or chemicals at hand, we can not say what kind of tea-pot stuff it is. These 14 pieces are set in a white metal ring, into which they are crowded, and are held in place by friction; though we are not sure but the larger white discs have a minute touch of solder. We have been thus particular in showing how the thing is made, as those who have but the most elementary knowledge of electrical action will see at once that it is absolutely



ELECTRIC BATTERY.

IMPOSSIBLE FOR ANY ELECTRICITY

to be generated—that is, any free electricity—with these different metals in absolute contact, unless indeed it may be of the "gimlet-pointed" kind, a style unknown to science, however it may be to "Professor" Boyd. There is no more development of electrical action between these bits of metal than there is between the coins in one's pocket—and we pronounce the thing to be an

UTTER BARE-FACED FRAUD.

There is one melancholy feature in the exposure of such successful humbugs—for, so far as the numbers sold go, this has been a success—that is, the comment it suggests upon the intelligence of the community. We make boasts of our popular education, of the general intelligence of the people and all the rest of it. Yet here is a thing, in its structure violating the simplest laws of science, bought and worn by hundreds, who deliberately assert that they can feel its electrical action, and claim to be benefited or cured by it. Yet it can have no more effect than the horse-chestnut carried about their persons by the ignorant, as a "preventive of rheumatism!"

Peach Trees and Frost.—A frost at blossoming time ruins the peach crop every year—in the papers. Aside from this regular killing there are seasons in which real damage is done and an actual frost, when the trees are in bloom, must seriously diminish if it does not entirely cut off the crop. Several years ago we suggested that owners of peach orchards try the method of warding off late frosts followed in the vineyards on the Rhine, which is to make a smoke. As a curtain of vapor in the form of clouds will prevent frost, so will a curtain of smoke. The danger of frost is greatest in the hour or two before sunrise; the vines which have been gradually cooling all night, do not reach a temperature so low as to be dangerous until towards morning. Then the smoke heaps are started and a cloud of smoke hangs over the vineyard until the appearance of the sun removes all danger. Fires of brush and wood rubbish are started, and wet straw is thrown upon them to produce a copious smoke. Frost occurs only on calm nights, but even then there is usually a slight current of air and the fires should always be at the windward side. If any have tried this method in the peach orchard we should be glad to hear with what results. It seems a matter well worth testing, and may be of great value.

A Veteran Peach Tree.—P. M. Augur, reports in the Middletown, Conn., "Constitution" that he examined a peach tree at the residence of Henry Hart, in Saybrook, Conn., which, at 2 feet 10 inches above the ground, measured 4 feet around. It had four principal branches having the circumferences respectively of 2¼ feet, 2.15 feet, 2 feet, and 1.14 feet—a total of 8¼ feet, or twice that of the main trunk. The tree has been a constant and abundant bearer.—This indicates that the peach tree is not necessarily a short-lived one, as is generally supposed.

Hens Eating their Eggs.—Where this habit has been formed it is a difficult matter to break it up, and it is generally the best and quickest way to kill the hens. If the bird is worth the trouble, a nest may be so arranged that the egg, when laid, will at once roll out of sight and reach. Some one has invented a "bit" to prevent the habit, but we know nothing of its value.

Late Frosts.—We expect early frosts, and in autumn accept the damage they do as a matter of course. Late frosts in spring are most disheartening; one crop, which was yesterday pushing forward so encouragingly is today blackened and dead, and we have either to begin anew with seed sowing, or with transplanted crops: fall back upon the reserves which the careful gardener preserves for such a contingency. But few are aware how slight a thing will protect from frost. It is the radiation of heat from the plant; its rapid cooling that kills it. In a clear night every exposed thing on the face of the earth is giving off heat, and when these cool down to a certain point, the moisture in the air falls upon them in frozen particles and we call it frost. If the night is cloudy, the cooling is less rapid, the clouds are said to reflect the heat given off; the air may seem as cool, but there is no frost. For tender plants a thin muslin, even a paper, suspended over them, will prevent injury. Tomatoes in the vegetable garden, and a host of things in the flower garden may be saved by the use of a curtain or screen, if only of paper. Whatever will prevent rapid radiation of heat will answer. We once had a bed of tender plants too broad to readily arrange papers upon and frost was predicted. A lot of brush was handy and this was stuck rather thickly in the bed, and then some light hay scattered upon the brush. The plants were saved. The object of the brush was to keep the weight of hay from crushing the plants. The French gardeners build a little straw tent over their tender plants; this is so arranged that the plants can be uncovered by day and housed by night. Cucumbers and other such plants will grow much more rapidly if covered at night. Though not cooled down so low that frost is deposited, they are so much cooled during the night as to seriously check their growth, and if they are covered regularly this is avoided. Frames 6 inches high and a foot square covered with a pane of glass will be found very useful in the garden, especially in forwarding cucumbers and melons. An efficient substitute may be found in soap, starch, and other store boxes; the cover and bottom are removed and a bit of muslin tacked over the top. Such frames, when their convenience is once experienced, will always be kept at hand, as their cost is insignificant.

Sorghum—Early Amber.—The fact that the variety of Sorghum introduced a few years ago as the Minnesota Early Amber, is now called by the shorter name of Early Amber or Amber, is an illustration of our frequent protest against complex names. Life is too short and farmers too busy to say Minnesota Early Amber Cane when Amber Cane will answer the purpose, which is to distinguish the variety. That it produces a fine amber-colored syrup is just now of more general importance than the fact—apparently established beyond a doubt—that it contains a paying amount of cane sugar. When those who have never before cultivated sorghum, learn how to raise it and to properly handle it so as to produce a superior article of syrup, a great point will be gained, and the farmer will then be prepared for the next step—the production of sugar. But we think it would be a great mistake for one entirely inexperienced to sow a large breadth to sorghum with a view to the production of a large amount of sugar. Go slow in this, as in all new things. Even in small quantities for syrup, the means of working up the crop should be thought of. But few are able to purchase a mill and evaporator for merely making syrup for their family use. If some one at no great distance is prepared to work up the cane for others, then it may be safely planted. If there is no mill in the neighborhood, then there should be co-operation. One farmer can procure an outfit, if several other farmers will raise enough cane to keep him at work during the season. Or several may unite to purchase in common. This matter should be determined upon well in advance, and the machinery ordered early, so that it may be set up and in working order well in advance of the harvest.

Successful Farmers in Hard Times.—An agricultural writer who has recently returned from a trip through the Eastern States says in an exchange: "A most noticeable thing in travelling among farmers is, that those who have held their own the best through the recent times are the ones who are the most progressive. By this I mean those who have been quick to see what was best adapted to their line of farming, and who endeavored to supply what the local demand called for. Such men have been the first to apply improved methods of cultivation and to cultivate well; to apply a liberal dressing of dung or chemical manures to their soils, knowing that it costs no more to cultivate a field which will yield a hundred-fold than one that will yield thirty-fold. If the prices are low the largest yield may pay a good profit, while the lowest means a serious loss."

Lawn Mowers.—Pennsylvania—Philadelphia.—We are not about to discuss the merits of these excellent mowers. Their makers usually set forth the superior qualities of their machines, respectively, in our advertising columns. But to have the maker of one mower advocate the merits of the rival machine is a novelty. Yet this is just what was done last month, when Messrs. Lloyd, Supplee & Walton were made to claim a high rank for the Philadelphia Lawn Mower, while in reality they are makers of the *Pennsylvania* Lawn Mower. The substitution of one name for another in this case is one of those unaccountable blunders that will sometimes occur with types—of course it is the fault of the types—and all we can do in the case is to state the fact that it is the "*Pennsylvania Mower*" and not the Philadelphia Mower that is made by Lloyd, Supplee & Walton, and that their machine has met with approval wherever it has been used. As to the Philadelphia Mower, its reputation is well established, and as every one knows is made by Graham, Emlen & Passmore, who will prefer to present its claims over their own name.

The Poultry Standard.—All who exhibit fowls are aware that the judging is—or ought to be—done in accordance with the American Standard of Excellence. This consists of a "Scale of Points" for each breed of land and water fowls, carefully considered and fixed upon by the American Poultry Association, and is by the authority of that body published in a book. At the Annual Meeting for 1880, held at Indianapolis, a number of amendments were made to the Standard affecting several important breeds. These have been published on a sheet as a Supplement, and can be obtained by sending a 3-cent stamp to the Secretary of the Association, Geo. S. Josselyn, Fredonia, N. Y.

Portable Sweep Power.—"W. H. S." A portable sweep power would not be nearly so convenient as a tread power, but any of the large dealers in agricultural machines, whose names appear in the advertising columns, could supply one. One is about as good as another, as they are all made on essentially the same principle.

Bee Notes for May.

BY L. C. ROOT.

The success of the beekeeper for the season will largely depend upon his properly conducting the operations of the present month. Those who read these "Notes" are aware that I differ with most writers as to stimulating early breeding. I speak chiefly from experience gained in Central New York, and my advice is especially applicable to similar climates. Those in warmer or in colder localities must time their operations according to the difference in the seasons.

With us the Soft Maple blossoms about May first. This I find the most suitable time to remove bees from their winter quarters. As soon as they are placed upon their summer stands and have had a flight, honey will be uncapped and removed to the center combs. The queen will at once begin to deposit eggs, and a general movement will be made towards rapid increase. The beekeeper should be prompt to aid, in all possible ways, the securing of the large force necessary to gather the stores of honey which will be afforded, as the season advances. If the stock is reasonably populous and has a good queen, proper food and a good degree of warmth are the essentials to its rapid increase. If the number of combs to each colony was limited as directed in April, supply each hive with additional combs, as the strength of the swarm demands. Sometimes, in the best swarms, nice clean combs may be placed in the center of the cluster when the queen will occupy them more readily; but take care not to injure the swarm by spreading the brood too rapidly. As brood is now being extensively reared, large quantities of honey are consumed, and care must be taken that the supply is not exhausted. During this month, in many localities, the Yellow Willow, and Sugar Maple, will furnish sufficient honey to aid largely in the increase The general bloom of fruit will closely follow the yield from these, which often affords a rich harvest, and brood-rearing will go on rapidly. Following the fruit blossoms and preceding White Clover, there will be a period in many localities when little honey will be gathered. Breeding may have gone on up to this point to such an extent, with so great a consumption of honey, that the supply of food may now be entirely exhausted, the result of which is more disastrous than beginners can appreciate. Breeding will not only be discontinued, but large quantities of immature brood will die for want of food, and be removed from the cells. If at any time this scarcity occurs, feeding is absolutely necessary. To sum up for this month: Do not remove bees from the cellar so early that the weather will be likely to hinder continued breeding. When once started, see that the entrance is small, that the warmth of the hive is retained, and that there is always a supply of food. Add empty combs, but only so fast as the strength of the colony requires. Never add more combs than the bees will occupy, as it increases the space that must be kept warm, which is not only unnecessary but harmful.

QUESTIONS AND ANSWERS.

FEEDING BEES TO STIMULATE BREEDING.—"In the spring shall I feed colonies with syrup that have a good supply of sealed honey?"...."If at no other time, is it necessary to feed colonies having sealed honey, during the scarcity between apple blossoms and white clover?"...."Are weak colonies with an abundance of sealed honey benefited by feeding syrup?"...."To stimulate breeding shall I uncap unsealed honey?"....These are very practical questions. While I am an advocate of judicious feeding, if done under the direction of an experienced operator, yet there are so many chances of failure, if improperly conducted, that I hesitate to advise the average beginner to practice it under the above mentioned circumstances.

STRENGTHENING WEAK COLONIES.—"To strengthen a weak colony, or one that does not work in the boxes during honey gathering, will it be safe and a benefit to remove it to the stand of a stronger one, and thus exchange them?" ...When bees are gathering honey very rapidly I have practised this with success. If boney is not gathered plentifully, it would be preferable to remove cards of brood from the stronger stocks, and exchange them for empty combs from the weaker ones.

AT WHAT AGE TO DESTROY QUEENS.—"Do you kill your queens when they are three years old?"...."Shall I not leave our queens just as they are, when by the presence of brood I know she is present?"....As a rule we do not rely upon a queen after the third season. Unless a close record is kept of the different colonies, it will be difficult to ascertain the exact age of all the queens. If we have a choice queen, we do not destroy her until we see signs of deficiency. Such queens as prove themselves prolific by a good quantity of brood, we would prefer to leave undisturbed.

GLASSING HONEY BOXES.—"Shall we put the glass in boxes filled with honey, as soon as removed from the hives, or not until time to send it to market?"....For many reasons it is preferable to wait until ready to ship.

SWARMS IN HIVES WITH COMB FOUNDATION.—"C. W N.," asks, "In hiving a natural swarm in a hive filled with comb-foundation, would you put the bees directly into such a hive, or gather them first in a common box hive and transfer them in the evening?"....Hive the bees in an empty hive just like the one containing the frames of comb-foundation. Then place the hive containing the foundation over the one containing the bees, and they will pass up into it, when the lower hive may be removed. This is preferable to waiting until evening and disturbing the bees a second time. If hived in this manner early in the day, a fine start will be made at comb-building. Comb-foundation used for this purpose should have wires incorporated with it to prevent sagging.

The Weeklies' "Agricultural Column."—The importance and the popularity of Agriculture in this pre-eminently agricultural country, is recognized by the newspaper press generally, by a maintenance of an "Agricultural Column." As a rule, these columns are a positive injury to the interest they would compliment, or even try to benefit, from the fact that those who edit—or rather "scissor" the contents, are not fitted by experience and education to do their work well. There are, if possible, more quacks among professed agricultural writers, than among medical practitioners, and these ambitious gentry have the faculty of setting forth their ideas, their whims, their crude theories, in a language and style that make them appear very plausible. Such items are quite as likely to go the rounds of the "Agricultural Column," as the cautious, careful teachings of well-informed, experienced, practical men. There are, however, exceptions to this general sweeping charge against the so-called "Agricultural Columns" of the weekly press, and the number of exceptions is increasing. First, are those who make up such columns, not from the usual floating deadwood or *light* wood, but only make their selections from the few agricultural journals of undoubted reliable and standard character. A few others go to the expense of securing the aid of men of acknowledged study and reliability to edit or provide material for such columns.—The above remarks were suggested for the moment, by noticing the series of articles on "Recent Developments on Dairying," by F. D. Curtis, Sec'y of the N. Y. Dairymen's Association, which are being issued from week to week in the "Northern Christian Advocate," of Syracuse, N. Y., whose agricultural, as well as other columns, are really edited with care and not at random, in the easy way, with "scissors and paste."

The Corn Crop.—The value of a corn crop cannot be fairly estimated by taking into the account the grain and fodder produced. It should be looked upon as a fallow crop, furnishing the opportunity for the thorough pulverization of the soil and the extermination of weeds in the labor required for promoting its full growth and development, while the raw manures that can safely be used will have an influence upon the soil that, the other more sensitive cereals will in their turn profit by. The manner in which manure should be applied will be determined by its condition and the economical disposition of the labor required in hauling and spreading.

The New York Horticultural Society is showing signs of renewed life in several directions. Its Monthly Exhibition, held on April 6th last, was so attractive that the room was so crowded as to suggest the need of a larger place in which to hold future monthly shows. We have recently received a copy of the essay read by Peter Henderson at the March meeting, on "Horticultural Progress," especially as relates to New York City. This interesting sketch is prefaced by a list of the officers and members of the Society, and all is produced in a style of such exquisite neatness that indicates rare good taste on the part of some one. We would again remind our friends that these exhibitions are held on the first Tuesday in each month, at 2 o'clock P.M.; all are welcome.

"Stagger Weed."—A Virginia correspondent writes that many horses and cattle die from eating a plant popularly known in his locality as "Stagger-weed." He sends a specimen which will, we think, soon flower, when we shall be able to determine what it is with certainty. Our correspondent resides in Tazewell Co., and the object of this note is to ask if a plant poisonous to domestic animals is known as "Stagger-weed" in other parts of the State. We are aware that there is a "Stagger-bush," but this is an herb that dies down at the approach of winter and comes up tender and succulent in spring. Any information concerning the effects and antidotes, if any are known or suggested, will be welcome.

Increase in Value.—Good Doct. Torrey in his lectures, as an illustration of the increase in value imparted to raw material by the processes of manufacture, used to compare the value of a pound of crude steel with a pound of the hair-springs to watches. We have now forgotten the figures he gave, but were reminded of the incident by an item now going the rounds of the papers, which begins with 75 cents worth of iron ore. This amount of ore is said to yield $5.50 worth of bar iron, which will be worth $10 made into horse-shoes. Converted into steel it will make $6,800 worth of needles, $200,000 worth of watch-springs, $400,000 worth of hair-springs, and if made into pallet arbors (which are parts of a watch) its value would be $2,500,000.

A Great Waste.—It is the practice of many dairy farmers to kill the calves at a very early age, long before they can be—or should be, of any use as food. This is a source of loss, which, take the country through, is something enormous. An animal already grown to the weight of 60 to 80 pounds, and which might, through a few weeks of proper feeding, be made to yield a large amount of food, is killed, and all that is saved is the skin! There are cases when it is the best economy to get rid of the calves so soon as they come, but these are exceptional, and in the ordinary dairy of a farm practising mixed husbandry, there is seldom, if ever, a call for such an untimely and unprofitable removal of the calves. It will pay well in many cases to grow the calves until they are six months old, and thus produce an animal weighing 500 pounds, and of the best quality, commanding a ready sale in the markets.

Improvement Through the Males.—The only practical method of the means that is within the reach of the average farmer, of raising the standard of a herd of cattle, flock of sheep, etc., is through pure blooded males. A male of this character may be bred to a considerable number of females, and all of the offspring will be brought more than half way up from the level of the dam to that of the sire. The sire being pure bred, will have the greater power to fix his characteristics upon the offspring. If the qualities of the Ayrshire are desired, it is not necessary to buy a full herd of Ayrshires, but instead, a single pure blooded bull, and with ordinary stock a good herd may be produced, which will, year by year, by careful selection, become more and more desirable, and thus, in the course of a short time, a very valuable stock may be built up at a comparatively small cost.

The Massachusetts Horticultural Society continues its annual offer of special prizes for the best essays on various horticultural subjects. For 1880 a prize of $50 is offered "For the Best Essay upon any Special Action of Fertilizers, illustrated by Accurate Experiments." A prize of $25 "For the Best Essay upon Flowers for the Home, with lists of the Best Annuals, Herbaceous Perennials, and 'Bedding Plants,' and a comparison of the merits of these classes." These prizes are designed to bring out new and important facts upon the subjects chosen. "Competition is open to all." Further information can be obtained by addressing the Secretary, Robert Manning, Boston, Mass.

Extreme Cold Endured by Seeds.—Some recent experiments by DeCandolle and Pictet, of Geneva, are of interest as showing the great cold which seeds may endure without injury. Mustard and cabbage seeds and grains of wheat, without previous artificial drying, were enclosed in sealed tubes and subjected to a temperature of 50 to 80 degrees below zero Centigrade (60 to 100 of our ordinary Farenheit thermometer), for from 2 to 6 hours. These seeds afterwards germinated promptly and with a vigor equal to those not thus treated.

Suggestions offered to Farmers in a recent "Bulletin" issued monthly from the rooms of the New Hampshire Board of Agriculture: "Pursue a higher and more economical line of farming, by adopting a better system of breeding and feeding domestic animals; by a more thorough preparation of the soil, and increased tillage; by adapting products to the markets, or to economical consumption; by the use of machinery in all farm operations; by increasing the manure heap, and its better care and application, supplementing it by the use of chemicals and specific fertilizers as required by soil and crops; by a judicious rotation, and the sale of crops in the most condensed form; in short, strive to secure the highest results from the least expenditure."

Vegetation Retains Soluble Matter in the Soil.—The April number of the "American Journal of Science" relates the following: "Soil three inches deep was placed in two glazed earthenware pans 17 inches in diameter, on July 21; four seeds of white clover were sown in one, the other being left blank. The pans were equally exposed until October 4, when the drainage water was collected and analyzed; that from the clover soil contained 48.1 grains of solid matter per gallon, the other 220 grains. The author concludes that rain removes much more matter from an uncropped than a cropped soil." We need more such experiments as these.

Bad Cement.—"J. Q." A cemented cistern shonld be left for a week or 10 days for the cement to set and harden, before the water is let in. If the bottom leaks after that, the cement mnst have been of poor quality. It would be well to empty the cistern, and give it a coat of clear cement, without any sand with it.

Like Produces Like.—Some years ago, we planted a number of hills with small potatoes, and by the side of them, an equal number with large ones. Both rows received the same attention; and on digging, the large "seed" gave 3½ times as many pounds as the small ones. Do not try to save the large potatoes, by planting the small ones; there is good reason why it does not pay.

To Measure Corn in Bulk.—"J. P. D.," Point of Rocks, Md. To measure corn in bulk, find the number of cubic feet by multiplying the length, width, and depth of the crib, or wagon box. 1⅕ cubic feet will make nearly a heaped bushel of ears, which is equal to half a bushel of shelled corn. A heaped bushel has 2,750 cubic inches, a cubic foot and a half contains 2,592 inches, but a bushel of ears will make a little more than half a bnshel of corn, and the excess in this will about balance the deficiency in the measure.

An Experiment Station in New Jersey.—One of the last acts of the N. J. Legislature was to provide by law for an Agricultural Experiment Station, and in no State is one more likely to prove usefnl. Shonld the Governor approve of the bill, good work will be done.

"Trimming Up" Evergreens.—A correspondent in Troy, N. Y., writes: "On the place which I have purchased there are many large evergreens, and the foliage around the house is so dense that I wish to trim up some of them. When is the proper time to do it?"—There is no day in the whole year which is *proper* for doing that which ought not to be done, and trimming np an evergreen tree is one of those things. A Hemlock, Sprnce, or Fir, with its lower branches upon the ground forming a pyramid of green, is a beantiful object. The same tree with its lower branches cut away, and its naked trnnk exposed, is a forlorn object that has no more beanty than a hay-cock upon a bean-pole. Our correspondent should first make a careful examination to see if his object can not be accomplished by the removal altogether of some of the trees; this would be far better than to mutilate them. We have no douht that to "trim np" several of the trees would give to the place a very different aspect, and one that will be very unpleasant.

Letters that are not Answered.—When one like "B. F. T.," Huntingdon Co., Pa., fills several pages with questions, covering not only the whole routine of farm management, but also asking advice as to whether he had better keep school in winter, or keep on the farm during that season, he cannot expect an answer. Occasloually a correspondent, like this one, qnite misunderstands the dnties of an editor. When one comes across some difficulty in his farm work, is in donbt whether it wonld be better to follow this or that course, and wishes advice in the matter, it is very proper for him to state his case and ask onr advice. But when a novice in farming asks a long string of questions to which a year's experience on a farm wonld teach him the answers, he must not expect us to write a treatise on general farming for his beuefit. Take the letter in question. We see but little that is not sufficiently met by our "Notes about Work," take the season through, and on several of the topics there have been special articles. More than this, our correspondent wishes us to tell him what it would cost per head to transport cattle from his place to market. We could write to the master at his depot and ascertain, but it will be much easier for him to apply in person.

Commission Merchants.—It is rarely the case that one who raises frnits and vegetables, is also the one who sells them to the consnmer, and it is an absolute necessity, especially with prodnce raised a long distance from the place of sale, that there should be parties who make it their bnsiness to sell it. The raising of frnits and garden trnck is easy enough, the proper selling of the prodnce is not so easy, and the snccess of the grower, depends largely upon the seller. There is probably no businoss in which there are snch ample chances for disagreement, and dissatisfaction, as that of the prodnce commissiou dealer. When all is managed with the strictest integrity, guided by the best jndgment, the "retnrns" may fail to be satisfactory to the grower, who changes his commission man, only to fare still worse with the new one. Among growers, the commission men have a had name, yet there are in that business men just as upright, and as honorable, as are to be fonnd in any pnrsuit. Then again, there are others who wonld be described as "on the contriary qnite the rewerse." The bnsiness is one which offers peculiar inducements to swindlers and sharpers. It can be carried on, for a while at least, with very little capital. The articles come to them on credit, and are sold for cash. Many a grower knows to his cost, that there are bogus commission dealers. To those who write us about this or that person who wish their consignments, we must give the advice not to ship a single package to one who can not refer to well known persons as to their business standing. As the peach season approaches, the peach districts are infested by persons representing themselves to be commission merchants, and offering great inducements to peach growers to consign to them. As a general thing, these fellows have no location, and if they do any business, it is as squatters somewhere on the sidewalk. We can only say to enqnirers, that by taking proper pains, they can find commission merchants of good repute. When dealings are commenced with one, do not change upon any slight provocation. It is a part of the business to have disappointments, and no human foresight can prevent losses on perishable articles, if they reach the market when it is already glutted.

Horticulture in Nebraska.—Nebraska carried off the prize from all other States for her fruit several years ago, and she deserved it. The State has always taken an active interest in fruit-culture, and it now keeps it up, as we see by the programme of a meeting of the State Hort. Society held at Lincoln in January last. Liberal premiums were offered for winter apples and pears, and also for flowers, and a number of interesting addresses were given. The State is divided into six fruit districts, and reports were made from each. The prominence of Nebraska as a fruit-growing State is largely due to the efforts of this Society, and the success of the Society is largely due to the active interest of its President, Gov. R. W. Furnas.

Plowing.—The character of the soil; the crop to be grown, and the kind, and amount of manure to be applied, are all factors which determine whether the plowing is to be deep or shallow. Light soil needs shallow plowing, and heavy soil with much vegetable matter, does best when plowed deep.

A Million Stamps.—"L. C. R." The story started in England, 10 or more years ago, and has been now and then revived in this country, that if some young lady can collect a million cancelled postage stamps, she can come into the possession of a large fortune. Then the version was, that stamps would be purchased in lots of a million each. There is no foundation for either version. Our correspondent does not believe it, but would like to be able to give a reason for discrediting the idea. That postage stamps which have been used are of no possible use, save as paper stock, and as such, are worth only about 3 cts. per pound, should be sufficient.

The Adulteration of Butter.—The occurrence of any more salt in butter than is necessary for its preservation is to be regarded as an adulteration. We do not know if examinations have been made in this country of over-salting for the sake of increasing the weight, but in poor grades of butter in London over 10 per cent of salt was detected, and the same sample contained a large quantity of water, so that the amount of real butter present was but 60 per cent.

The Apple-Tree Borer.—Even where the Borer is common but comparatively few understand its history, and we are not surprised that inquiries should come from California where it has heretofore been rare, if not quite unknown. California fruit-growers, who have so long been free from the pests so destructive to their eastern brethren, are, as their State gets older, becoming more and more annoyed by insect pests. The perfect insect of the Apple-tree Borer is one of the long-horned beetles; it is about three-quarters of an inch long, and has a pair of feelers more than half as long as itself; its body is brown, with two broad, nearly white stripes, hence it is called the Two-striped Superda (*Superda bivittata*). The beetle is seldom seen, as it is dormant by day but flies and works at night. The insects begin to appear this month, and next month the female lays her eggs on the bark near the ground. The young grubs soon bore through the bark, and enter the tree, where they live upon the sap wood, just beneath the bark, forming a cell or excavation the size of half a dollar. It lives, eats and grows here for about a year; then, having stronger jaws it in the second summer bores upwards towards the center of the tree, making a hole 3 or 4 inches long, which it then curves outward until its upper end reaches the bark again and, at the beginning of the third winter, it makes a bed and rests, in the next spring becoming a pupa, and soon after changing to a beetle which bores an exactly round hole through the bark at the upper end of its gallery, and comes out into the world to lay eggs to produce more borers. This is the life history of the insect. Any "remedy" must be of a kind to keep the young borer out, or to kill it after it is in. Soap is found to keep off the parent insect. The base of the tree is kept clear of weeds and the lower part of the trunk is rubbed with soap; the application is repeated during June if washed off by rains. Young orchards are to be examined late in July or early in August. Weeds, trash, and about an inch of soil are removed from around the base of the tree. The bark is carefully examined, if chips are found, or the bark looks dead and dark, cut into it with a sharp knife and cut the borer out. If the insect has bored upwards, it is to be followed by a wire, a piece of whale-bone, or a twig, and killed. ....

(*Basket Items continued on page* 203.)

Fences and Fencing.

We are greatly obliged to our readers who have responded to the request for reports of their experience in the use of barbed-wire fencing, and though we can present only a very small portion of the communications received, they are highly esteemed, as they supply the information we much desire, in getting at the wants of the country. We solicit still further contributions from those of our readers having experience in the use of such fences,—those not directly or indirectly interested in their manufacture or sale.

A large number of suggestions, plans, etc., for metal *posts* have come to hand, and are on file for reference, and reply as we can find time. The great rise in iron and steel took away much of the interest in this branch of the subject; but since our last issue there has been a decline of 20 to 30 per cent in the price of iron. The decline is likely to continue from the causes previously referred to, and this subject will, in consequence, have an increasing interest, and new devices and inventions will be in order. In the present issue we make room for extracts from correspondent's letters, taking them almost at random from our letter files.

Barbed Fences—What Correspondents Say.

R. Noyes, of Coles Co., Ill., writes: "....I have no direct or indirect interest in any fence, except that I want to use the cheapest and best. Six years ago I put up 40 rods of barbed wire fence and each year have added to it, and like it so well that this year I am selling off (good) and burning up (decayed) both rails and board fence, because I think it better and cheaper to build wire fence than to repair the old, although I am making and selling new wooden rails on the place. As to posts, I find that a few good posts answer, with young trees set in the row so that when the posts are gone it leaves your fence an ornament instead of an eye sore. Then it is so cheap. Two wires will turn the worst large stock; three for calves and sheep, and five for hogs. The railroads use nothing else here; and as a man and a boy can put up half a mile in a day, after the posts are set, it saves labor. 'Travelers' do not steal it for kindling or seat boards, nor travel across your land. As to its being 'barbarous,' I have never known an animal really hurt with it, and if they are scratched they will not try it again. The only place I have found it would not do was around small lots where numbers of cattle are kept; they will hook each other through it."

L. B. Goodwin, of Rock Island County, Ill., writes...."My own fence has only one barbed wire above two boards, and has turned stock thoroughly for two years. When I had a board in place of this wire, we often had the fence broken (mostly by colts rubbing against it), which never has happened since the wire was put on. There is a great deal of barbed wire fence in this neighborhood, and the quantity is increasing. Cattle are 'free commoners' here, and there is a large area of open prairie, where 300 or 400 head of cattle and horses run through the summer, and I have yet to hear of any break in any barbed fence, unless the cattle were stampeded. I know of several instances where horses have been seriously hurt by running against the barbs. One of my neighbors had to sew up 10 gashes on a valuable mare of his which ran against the wire and became frightened, and dashed from side to side of the narrow lane which led to his pasture, some cuts reaching the bone. Another case was where a horse in rolling got entangled in the wire, and was so badly hurt that its owner shot it. I had a pair of colts which were cut slightly,

and they now keep at a respectful distance from any kind of wire. I consider barbed wire as dangerous to stock unaccustomed to it, but as cattle and horses need but one introduction to the stranger, and shun it ever after, we can not afford to dispense with it....."

Warren Stone, of Lyon Co., Kansas, writes us "....Here on these treeless prairies barbed wire is almost a necessity, and without doubt is a great blessing. The land has lain vacant around Emporia for years, because it was impossible to open a new farm and fence it with boards at the price demanded for lumber here. But now everything is changed; new farms spring up as if by magic. It is only a question of two days to fence a quarter section. We have a post driver here run by horse-power, that has a mallet weighing 200 lbs. A 50-lb. one would make no impression on this prairie-sod. I find that it is impracticable to make a *good* fence unless the posts are driven and the wire stretched *tight*. Almost every kind of barbed wire is in use here, and none are too severe; the town cattle will stop for nothing else. We make a very good fence with two wires, that is proof against cattle. The best fences here are two wires with a board between them. I put the board on top so that horses can see it better. But for all purposes I would want no better fence than two wires and a board between. I write this to encourage you in the work of commending wire fences. It is so quickly done; there are no boards to blow off, decay, etc. No other kind of fence is made here since the introduction of barb wire. I think it only a question of time when it will be so everywhere."

Louis Voruz, of Coffey County, Kansas, writes us: "....I have had a year's experience with one kind of barbed fence, illustrated in the *American Agriculturist*, one with loose twist, four-pointed wire barbs, long and sharp. I had a mare dart through at full gallop, lifting the corner brace post clear off the ground, and sawing a fearful gash across her breast. She however recovered quite quickly. I have about a mile of two-wires fence, with posts two rods apart, and in some places with two stakes stapled between the main stakes. As a rule, an animal which has once been through that fence does not care to repeat the experiment. I am in favor of sharp, straight barbs [standing out perpendicular from the wires, not hooked or inclined in either direction] *but not long enough to penetrate the vital part of any living thing.* As for injuring people's dress along the public thoroughfares, well, I shall care for that when the majority of said people make it unlawful for stock to range at liberty in the public roads. I am only interested in barbed wire as a buyer for my own use....."

Mr. Voruz gives in detail his simple plan of putting up the barbed wire which is usually sent out from the manufactory wound on a frame or spool. A suitable stick or wooden rod being put through the center of the spool, is laid across the top of the rear end of a wagon box, the projecting cleats preventing it from slipping back. The end being fastened to the first post, the wagon is driven along the line, the wire unwinding from the top of the spool. When the end of the line is reached [or a sufficient quantity is reeled off] this end of the wire is twisted or tied to one of the spokes of the hind wheel next the fence, near the hub. The axle is then lifted to clear the wheel. The team is then unhitched and the wagon tongue fastened to a post or a crow-bar thrust in the ground. Then by turning the wheel by hand the wire winds around the hub, and we have strong lever power, sufficient to stretch the wire very taut through its whole length. It is then only necessary to pass along and staple it fast to the posts. At first the barbs may catch in the grass, and it may be necessary to lift it by hand in some places until a few turns of the wheel brings it up from the ground. The operation is repeated for the other wires. I learned this practice from a neighbor, and hope it is not patented or patentable. [We do not think it is or can be patented.—ED.]

JAMES R. GILLIS, Louisa County, Iowa, writes; "I am using barbed wire fencing, and find it efficient (if properly constructed) in restraining cattle and horses. I have no sheep, and use board fences to enclose hogs. In Iowa, three barbed wires, or four wires two of which are barbed, make a legal fence. Posts may be two rods apart, but must have a stay lath between, to prevent sagging. The top wire must be not less than 48 inches from the ground, nor more than 56 inches; bottom wire not less than 16 inches, or more than 20 inches. Hogs and sheep are not permitted to run at large. —The common error in building wire fence, is in getting it too high. I think, three wires well strung, not more than 45 inches from the ground to the top wire, will turn any sort of cattle or horses—unless it may be calves that can run under. Stock soon learn to avoid it. Horses may be taught by being led against it a few times. I have used barbed wire fence for some months as a pasture feuce for ten horses, and have only had one scratched, and that not seriously. I believe the day is not far distant in Iowa, when we will not be compelled to fence against stock of any sort.—I think I see a tendency on the part of the wire I am using, to rust. Wire put up in November last, has a great many rusty places in it. The paint or tar, or whatever is put on the wire, seems to scale off badly. For putting up long stretches of fence—say 100 rods or more, a steady team is the best appliance for straining the wire, and making it "taut." For short distances, "strainers" of some sort are better. The retail price of wire here, is very little more than before the advance in iron goods."

A. J. Thompson, of Walker County, Texas, writes: "....Like Mr. Robt. Wood, of Grant Co., Wis., I wish a fence that will keep pigs out, and I propose one, part of wire and part plank; posts of cast iron. Let every alternate post have a mortise 2x12 inches, and the other posts a mortise 1x12 inches. Or, if preferable, let the mortise be 2x6 inches and 1x6 inches. Also have a second 4-inch mortise above the first. The first would receive a plank 1x12 inches, while in the other there would be two planks, each one inch thick and 6 inches wide; this would give about 20 inches from the ground to the top of the plank, sufficiently high to keep out hogs and pigs. The mortise 2x12 inches or 2x6 inches would receive the ends of the plank. Here they would lap, while the center of the plank would rest in the mortise 1x12 inches, or 1x6 inches. If the mortises were made 5 inches above the ground, dirt might be thrown to the plank to prevent anything from passing under. A hole might be cast in the center of the mortise to receive a bolt or ten-penny nail, to keep the plank from slipping, and could be easily removed to renew the plank if it should decay, without interfering with the remainder of the fence. Then place the wire any distance above you may wish, having places cast in the post to receive it. If desirable, mortises might be made in the top to receive a slat 1x4 inches. Stock could see this, and would not run against it...." [At present such cast-iron posts would be too expensive for general use. The same mode of construction could be applied to wooden posts. If the plan here described is not practically useful, it will at least suggest other modes. ED.]

Eastern Farmers—Raise More Corn.

We call especial attention to the experiments in Prof. Atwater's article on pages 180-1. Either the unanimous testimony of these trials by intelligent farmers on their farms is false, or corn can be grown at a profit with the right sort of fertilizers. These gentlemen get 50 bushels of shelled corn per acre, which they would otherwise buy at say 60 cts. per bushel, and an amount of stalks which, if rightly fed, are well worth $10, when ordinary hay is worth $10 per ton, that is $40 worth of fodder, at an expense of—including freight—$9 for fertilizers. And if they feed out the produce, the same rates that they pay for the valuable fertilizing ingredients in commercial fertilizers, will make the well husbanded manure worth the whole cost of the fertilizers. The great point is that the corn, aided by the inexpensive mineral fertilizers, gathers the most costly element, nitrogen, from natural sources. If it can be established, as these trials imply, that corn can generally do this, that it is, like clover, a "renovating" crop, that fact will be of untold value for our agriculture.—The "bonanza farms" out West will in their turn run out bye and bye. The mineral elements to bring them up can be had at comparatively little cost, but nitrogen in fertilizers is scarce and dear. If corn can gather it for us and give manure for other crops the portent of exhausted prairies is not quite as dismal as our political economists would make it, after all.

Benefit Yourself and the Public.

Those who omitted to carefully examine the articles on Fertilizers, pages 135-6-7 in the April *American Agriculturist*, should do so at once. There is yet ample time to secure the experimental fertilizers and test them on corn. Every one who does this, will not only gain much information, positive and negative, in regard to his own farm, that can hardly fail to be of great use to him in the future, but every such experiment that is made and reported adds to the amount of general information that will be of great and universal public utility. As a general rule, the fertilizers will more than repay their cost the first year by the increased product realized from their use.

Science Applied to Farming—LVII.

Fertilizers for Corn.

How to grow corn profitably is an important problem. The main factor is the manure. What are the best and cheapest fertilizers for corn, is a question that deeply interests most farmers in our older States and many of the newer regions.

The Feeding Capacity of the Corn Plant.

The first things to be learned are the power which the plant has to gather its supplies of food from natural sources, and the specific effects of different materials upon its growth. Can corn gather its nitrogen from soil and air like clover, or does it, like wheat, require large quantities in fertilizers? Is it especially helped by phosphoric acid like turnips, or is potash more important to aid its growth? Opinions differ widely on these points. There is urgent need of more light upon them. The main question is the nitrogen supply. If, as some prominent agricultural teachers have recommended, farmers must advance from $10 to $15 cash in the spring for nitrogen for an acre of corn, run all the risks of soil and season, and wait until winter for the return, the future of corn growing is not bright. But if, on the other hand, we may omit the nitrogen, apply only the inexpensive mineral fertilizers, reduce the yield but little, have the corn gather the nitrogen itself, feed it to stock, enrich the manure, and help bring up the land, that capacity of this grand staple will go far to establish it in the place for which nature seems to have designed it—next to grass, the sheet anchor of farming in the older States. Is Corn an

"Exhausting" or a "Renovating" Crop.

In the *American Agriculturist*, for April, 1879, I gave results of some special experiments, to test the question of the nitrogen supply. Similar trials were made last season. The results of the two seasons' work are given in the table, in which the plan of the experiments is also mapped out.

The idea was to compare the effects of mineral fertilizers (superphosphate and potash salt), alone, and the same with nitrogen in different amounts and forms. The nitrogen was supplied as nitric acid in nitrate of soda, as ammonia in sulphate of ammonia, as organic nitrogen in dried blood, and in several forms combined in the "Nitrogen Mixture" and in Peruvian guano. In view of the danger of results being vitiated by irregularities in soil or otherwise, the tests of the effects of nitrogen in varying amounts were duplicated in groups III. and IV. and that of the "Mixed Minerals" in VI. and XVI. Suggesting a careful study of the table for details, I give a brief recapitulation of the

Effects of Nitrogenous Fertilizers upon Corn.

As regards the effects of nitrogen in different forms, in 1878, the Peruvian guano brought the

largest increase; the "Nitrogen Mixture" (nitrate of soda, sulphate of ammonia, and dried blood in equal parts) next; then followed, in order of valuable effects produced; nitrate of soda, sulphate of ammonia, and last and worst of all, dried blood.

In 1879, with the irregularities in experiment C, and the positively injurious action of the nitrogen in D, the order of efficiency of the ingredients is altered so that in the average for the two years the sulphate of ammonia comes first, the Peruvian guano second, and the nitrate of soda last. But more trials are necessary to give reliable information as to the action of these materials. The factors of the problem are so multiplex that research will be needed to disentangle and measure them. Estimating a bushel of corn, with its cobs and stalks, to contain 1½ lb. nitrogen, and to be worth 80 cents, the effects of the nitrogenous fertilizers in these "special" experiments and in the general experiments described in the previous articles, may be summarized as follows, remembering that the superphosphate and potash salt, "mixed minerals," supplied the amounts of phosphoric acid and potash in a crop of not far from 55 to 60 bushels, which wonld also contain about the 72 lbs. of nitrogen.

In the general experiments the mixture of 300 lbs. superphosphate and 200 lbs. muriate of potash brought on the average of fifty-three expcriments, about 42 bushels of shelled corn per acre. The special experiments above seem to me a fairer test of what the fertilizers may do, because, while made in all sorts of weather and on worn-out soils, they were all on soils and in latitudes fit for corn, as many of the general experiments were not. In these, the mixture of 300 lbs. superphosphate and 150 lbs. of potash salt, which can be bought for $8.25, brought on the average 50¼ bushels of shelled corn per acre.

The experiments of the two seasons bear unanimous testimony to two things: The corn was helped but little by nitrogen in the fertilizers; and it gathered a good deal from natural sources. The increase of crop and of nitrogen in the crop will appear more clearly if we look at it another way.

EFFECT OF NITROGENOUS FERTILIZERS ON CORN AND POTATOES.

EXPERIMENTS FOR STUDYING THE CAPACITY OF THE CROPS TO GET THEIR FOOD FROM NATURAL SOURCES, AND THE EFFECTS OF DIFFERENT FERTILIZERS UPON THEIR GROWTH, WITH SPECIAL REFERENCE TO THE NITROGEN SUPPLY.

Potash and Phosphoric Acid (with Sulphuric Acid and Lime) supplied in proportions contained in a Corn crop of 50 to 60 bushels. Nitrogen is one-third, two-thirds, and full amount contained in same crop. Amounts of fertilizing materials about as are advantageously employed in farm practice.

A 1878. Prof. J. R. Farrington, Orono, Maine. *Soil.*—Clay loam, heavy, moist, underdrained,—worn-out meadow. *Weather.*—Cold, wet, unfavorable.
B 1878 and 1879. W. I. Bartholomew, Putnam, Conn. *Soil.*—Hill land, dark loam, compact subsoil,—worn-out meadow. Experiment of 1879 on adjoining portions of same fields as experiment of 1878. *Weather.*—1878, favorable; 1879, cold, unfavorable.
C 1878 and 1879. Chester Sage, Middletown, Conn. *Soil.*—Heavy loam, hardpan subsoil,—worn-out meadow. *Weather.*—Favorable. Experiment of 1879, on field contiguous to that of experiment of 1878.
D 1878. Col. J. B. Mead, Randolph, Vt. *Soil.*—Clay loam, compact subsoil. Had oats in 1878. *Weather.*—Cold, backward, very unfavorable.

No. of Plot.	FERTILIZERS. Classification.	Kinds and amounts per acre.	Nitrogen per acre.	YIELD PER ACRE IN BUSHELS. B 1879 POTATOES. Good.	Poor.	Total.	B 1879 CORN. Total.	C 1879 CORN Good.	Poor.	Total.	D1879 CORN Total.	A1878 CORN Total.	B1878 CORN Total.	C1878 CORN Total.	Average of Corn Experiments.
				bu.	bu	bu.	bu.	bu.	bu.	bu.					
1	Partial Fertilizers. To test Effects of individual Ingredients and capacity of soil. Group I. Valuable Ingredients, one by one.	1. Nitrogen mixture, 150 lbs.	24 lbs	22	20	42	7.4	42.6	6.2	48.8	6.8	19.5	15.1	12.7	20.4
2		2. Sup'phos., 300 lbs. (Phos. ac., 48 lbs.)	......	40	32	72	36.5	41.0	4.4	45.4	7.0	29.1	39.9	16.5	29.1
3		3. Mur. pot., 150 lbs., (Potash, 75 lbs.)	......	24	22	66	7.7	54.2	4.9	59.1	41.2	32.9	19.1	62.3	37.0
0		0. No Manure	......	30	16	46	7.7	33.1	6.4	39.5	8.2	20.8	17.7	11.3	17.3
4	Group II. Valuable Ingredients, two by two.	4. Nitrogen mixture, 150 lbs. / Superphosphate, 300 lbs.	24 lbs.	78	36	114	41.4	36.9	4.2	41.1	20.5	37.0	41.9	11.2	32.2
5		5. Nitrogen mixture, 150 lbs. / Muriate of potash, 150 lbs.	24 lbs.	32	20	52	7 1	55 0	3.2	58.2	39.2	42 9	21.1	68.9	39.6
6		6. Superphosphate, 300 lbs., / Mur. of potash, 150 lbs., } Mix min. fertiliz's	......	81	34	115	42.0	43.6*	2.2*	45.8*	50.2	39.0	43.1	70.3	51.3
7	Complete Fertilizers. To test Effects of Nitrogen in Different Amounts and Forms. Group III. Nitrogen as nitrate of soda in different proportions.	7. Mixed min. fertilizers (as No. 6) / Nitrogen mixture, 150 lbs.	24 lbs., = ⅓ Ration.	84	46	130	45.7	57.2	3.6	60.9	40.8	39.8	51.7	84.0	53.8
8		8. Mixed mineral fertilizers / Nitrogen mixture, 300 lbs.	48 lbs., = ⅔ Ration.	108	40	148	46.8	57.6	3.8	61.4	47.6	43.9	47.3	79.7	54.4
00		00 No manure	......	32	24	56	8.5	40.2	4.4	44.6	7.3	25.5	......	7.0	19.9
9		9. Mixed mineral fertilizers / Nitrogen mixture, 450 lbs.	72 lbs. = Full Ration.	88	42	130	42.2	56.4	2.6	58.6	47.5	52.6	47.3	78.4	54.4
10	Group IV. Nitrogen in mixture in different proportions.	10. Mixed mineral fertilizers / Nitrogen mixture, 150 lbs.	24 lbs., = ⅓ Ration.	134	32	166	44.0	66.6	7.1	73.7	45.5	48.4	50.0	72.1	55.6
11		11. Mixed mineral fertilizers / Nitrogen mixtnre, 300 lbs.	48 lbs., = ⅔ Ration.	106	36	142	44.5	31.2†	2.8†	34.0†	38.5	45.5	50.7	83.9	49.5
12		12. Mixed mineral fertilizers / Nitrogen mixtnre, 450 lbs.	72 lbs., = Full Ration.	116	30	146	39.1	73.8	1.4	75.2	42.5	41.1	56.4	84.6	56.4
000		000 No mannre	......	....	....	....	....	39.6	4.9	44.5	10.5	......	......	10.1	21.7
13	Group V. Nitrogen, ⅔ Ration, in different combinations.	13. Mixed mineral fertilizers / Sulphate of ammonia, 225 lbs.	48 lbs., = ⅔ Ration.	112	44	156	40.2	85.6	2.6	88.0	42.8	35.9	58.1	82.2	57.1
14		14. Mixed mineral fertilizers / Dried blood, 450 lbs.	48 lbs., = ⅔ Ration.	110	48	158	40.7	62.9	.....	62.9	57.8	44.3	55.0	69.6	55.0
15		15. Peru. guano, "Standard," 550 lbs. / Muriate of potash, 150 lbs.	48 lbs., = ⅔ Ration.	92	40	132	38.5	71.6	......	71.6	54.6	48 1	55.3	77.5	57.6
16		16. Snperphos., 300 lbs., / Mur. pot., 150 lbs., } Mixed min. fertilizers	......	86	38	124	36.5	58.8	4.6	63 4	45.9	......	......	......	48.6
		17. Farm manure	......	....	....	....	....	......	......	......	46.5‡	34.8§	49.8‖	43.3¶	43.6

* These low results are doubtless dne to irregularities in the soil. Being so palpably abnormal those of plot 16 are substituted in computing averages.
† Exclnded from subsequent computations for same reason. ‡ Yard manure, 20 two-horse loads per acre. § Stable mannre well cured, 15,000 lbs. per acre. ‖ Hog manure. ¶ Hen manure. The "nitrogen mixture" consisted of nitrate of soda, sulphate of ammonia, and dried blood in equal parts.

AVERAGE RESULTS OF EXPERIMENTS OF 1878 AND 1879.	THE CROPS AVERAGED BUSHELS PER ACRE. 1878. 3 exp'ts.	1879. 3 exp'ts.	1878 and 1879. 6 exp'ts.	THE CROPS CONTAINED POUNDS NITROGEN PER ACRE. 1878. 3 exp'ts.	1879. 3 exp'ts.	1878 and 1879. 6 exp'ts.
Special Experiments.						
Mixed minerals alone......	50.8	50.6	50.7	67.7	67.5	67.6
do. + 24 lbs. Nitrogen	57.7	51 8	54.8	76.9	68.0	73.0
do. + 48 lbs. Nitrogen	58.4	52.5	55.5	77.9	70.0	74.0
do. + 72 lbs. Nitrogen	60.0	50.9	55.5	80.0	67.8	73.9
General Experiments.	27 exp'ts.	26 exp'ts.	53 exp'ts.	27 exp'ts.	26 exp'ts.	53 exp'ts.
Mixed minerals alone......	42.9	40.8	41.9	57.2	54.4	55.8
do. + 24 lbs. Nitrogen	48.6	46.7	47.7	64.8	62.3	63.5

	In number of trials.	WITH NITROGEN. Amount per Acre.	Contained in Crop of	The average increase of Corn was	The increase of Nitrogen in the crop was
1877–8	29	24 lbs.	18 bushels	5.9 bush.	7.9 lbs.
	15	48 "	36 "	7.6 "	9.1 "
	6	72 "	54 "	9.3 "	12.4 "
1879	26	24 lbs.	18 bnshels	5.9 bnsh.	7.9 lbs.
	14	48 "	36 "	1.9 "	2.5 "
	6	72 "	54 "	0.3 "	0.4 "
1878 and 1879	55	24 lbs.	18 bnshels	5.9 bush.	7.9 lbs.
	29	48 "	36 "	4.8 "	5.8 "
	12	72 "	54 "	4.8 "	6.4 "

Or, from a pecuniary standpoint the results show:

	In Trials. Total Number.	With Nitrogen. Amounts.	Costing.	The Nitrogen paid for itself in trials.	The Nitrogen failed to pay for itself in trials.	The average loss in the several trials was
1877–8	29	24 lbs.	$ 5.62½	8	21	$ 0.90
	15	48 "	11.00	1	14	4.45
	6	72 "	16.50	none.	6	8.51
1879	26	24 lbs.	$ 5.62½	5	21	$ 0.90
	14	48 "	11.00	1	13	9.48
	6	72 "	16.50	none.	6	16.26
1878 and 1879	55	24 lbs.	$ 5.62½	13	42	$ 0.90
	29	48 "	11.00	2	27	7.47
	12	72 "	16.50	none.	12	12.39

The nitrogen increased the crop enough to pay the cost in thirteen trials out of ninety-six. The pecuniary loss rose and fell with the amount of nitrogen used. With mineral fertilizers alone the crop gathered, as is shown by the above estimates, some 65 lbs. of nitrogen per acre.*

As regards the effects of the several fertilizing materials, phosphoric acid took the leading place often, potash occasionally, and nitrogen very rarely. In bad seasons, and on some soils in good seasons, neither material had any effect. The most effective ingredient, as might be expected, depended upon the soil and the season.

Is Corn in Its Relations to Nitrogen, more Closely Allied to the Cereals, or to the Legumes: To the Grains or to Clover?

One thing detracts from the decisiveness of the experiments. Most of the trials were on old grass land which contained large quantities of roots on which the corn doubtless fed. How well it could provide itself with nitrogen from nitrogen compounds in the soil and from air without the roots to feed upon is not settled. But the trials that have been repeated on the same plots imply that the corn did not depend greatly upon the roots of previous crops for its nitrogen.

* I may add that Mr. J. W. Sanborn, Farm Superintendent of the N. H. Agricultural College, has conducted experiments for two years on a similar plan, and, with a smaller quantity of the superphosphate and potash salt, got 37 bushels in 1878, and in 1879, on the same plot, 67½ bushels. By the addition of nitrogen, the yield in 1878 was increased, but diminished in 1879, as in the experiment of Col. Mead, of Vermont (D, of the table).

The experiments are numerous and decisive enough to warrant the inferenee that, as corn is commonly grown, nitrogenous fertilizers in any considerable quantity would be rarely profitable. They imply that corn has somehow or other the power to gather a great deal of nitrogen from soil or air, or both, and that in this respect it comes closer to the legumes than the cereals, that it is more like clover than wheat—that, in short, corn may be classed with the "renovating" crops.

A Question for Further Investigation.

Corn is botanically allied to wheat. The cereals, generally, demand large quantities of available nitrogen. But in all these experiments corn makes little response to nitrogen, or is positively damaged by it, and does well with the mineral fertilizers. Why, how, or to what extent the implied conclusions are true I do not presume to say. The subject evidently demands much more thorough study.

Practical Application.

According to the tables in last December's *American Agriculturist*, the several valuations of digestible ingredients that would make the feeding value of a ton of fair hay $11.00, and of a bushel of shelled corn 60 cents, would bring a ton of well cured corn-stalks at $8.00. Reckoning the stalks at only $6.00 per ton and 1¼ ton to the 50 bushels of shelled corn which came with the mixture of 300 lbs. superphosphate and 150 lbs. muriate of potash, the value of the crop for fodder would be $40.50.

Supposing the crop to be fed on the farm, two-thirds of its nitrogen, phosphoric acid and potash, reckoned at prices ordinarily paid for them in equally valuable forms in commercial fertilizers, would be worth $8.50, the cost of the fertilizer. The fertilized crop probably leaves the land in about as good condition as it was before; the manure, well husbanded, more than pays for the fertilizer, and there remains over $40.00 worth of fodder in return for labor and rent of an acre of land. It strikes me that farming of this kind is profitable and practical.

A Word to Our Experimenters.

I wish to warmly second the proposals of the Editors of the *American Agriculturist* for experiments with fertilizers the coming season, and hope that as many as possible may join in the trials, and that those who made them last year will repeat them the coming season. W. O. ATWATER.

Wesleyan University, Middletown, Conn.

A Cottage for the Country Costing $1,800.

BY S. B. REED, ARCHITECT.

These designs are for a roomy and home-like country dwelling with ample accommodations for a family of average size, and containing some of the most essential of modern improvements....**Exterior** (fig. 1).—The ground measurements are 36 by 41 feet—giving a desirable breadth of base each way. The outlines are irregular, and broken

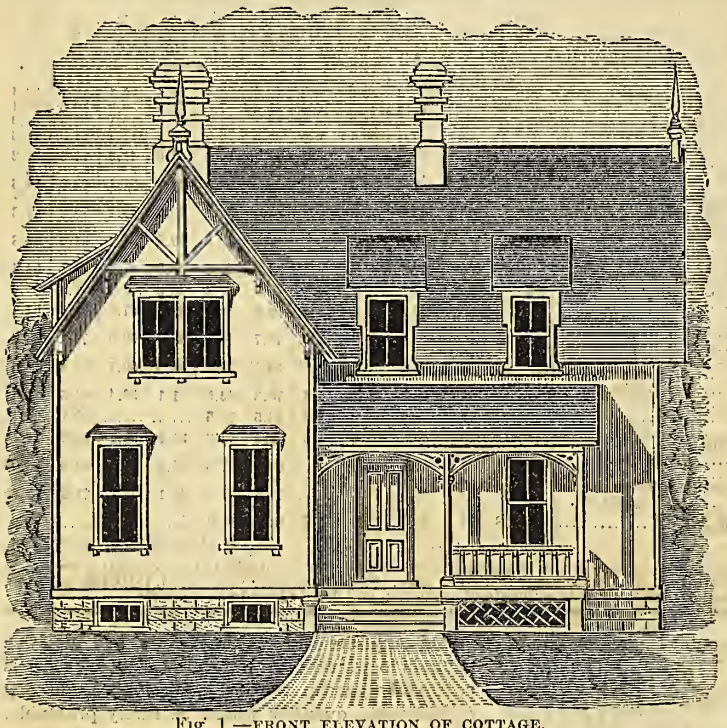


Fig. 1.—FRONT ELEVATION OF COTTAGE.

with sharp, well defined angles, which impart an appropriate rustic appearance, that will be picturesque on a level, monotonous prairie, while it would harmonize with rugged surroundings. There are two pleasant verandas—one in front, and one in the rear of the Living-room. In some localities it would be desirable to extend the front and rear windows of the living-room to the floor, making both verandas directly accessible....**Cellar** (fig. 2).—Hight 6½ feet, and of the same size as the main house, giving abundant room for ordinary purposes. If desired, a solid partition may be made in line with the girder (shown by dotted lines), thoroughly dividing the space at little cost;—and giving a

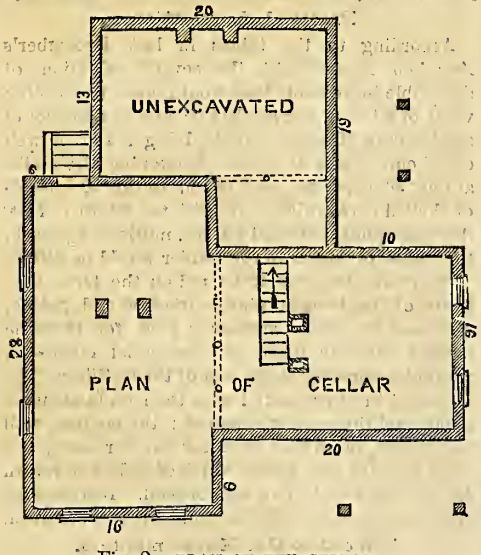


Fig. 2.—PLAN OF THE CELLAR.

"warm cellar" on one side, and "cold" one on the other. There are six small windows, admitting light from three directions, an outside entrance at the rear is inclosed with hatchway doors. Should more cellar space be required, it may be extended under the kitchen while building, at an additional cost of twenty dollars....**First Story** (fig. 3).—Hight of ceilings 9½ feet. The front entrance leads from the veranda to the main hall, which is centrally located, and communicates directly with the four principal rooms on this floor, and contains the main stairs to the second story. Each of the rooms is conveniently situated, and has the necessary windows to admit plenty of light and air. The dining-room and kitchen have each outlooks in three directions, and are arranged to communicate with each other through the pantry, which is thoroughly shelved, and has a narrow window. A door opens from this pantry directly to the cellar stairs, which are under the main stairs. Many prefer such conneetion between the pantry and cellar for convenience. A large proportion of the stores required for the table, come directly from the shelves and safes in the cellar, and by this plan many steps are saved. The kitchen is conveniently arranged. An outside door opens from the rear veranda. A good sized pantry, *C*, an open fire place, a pump, sink, and a closet under the sink, are provided. The fireplace is suited to the use of a range with waterbacks, placing the boiler at the side of the chimney if desired.....**Second Story** (fig. 4).—Hight in the main house 5 feet at the plates, and following the rafter to the full hight of 8 feet; hight in the wing 2 feet at the plates—to 6½ feet in the center. The roofs are unusually steep, so that a person of ordinary hight will be able to stand erect within six inches of the sides of the principal rooms at their lowest point, making them as useable for chambers, as if with full hight or level ceilings. Each of the principal chambers have closets adjoining the chimneys. One chamber suitable for a servant's room, a bath room, and a store room, are placed over the kitchen. The bath room is furnished with a seat closet and bath tub. An opening with register is placed in the floor at *R*, admitting warm air from the kitchen ceiling....**Construction.**—The foundations are of brick, where stones are not plentiful and cheaper. The walls show 2 feet above the earth grades. The Chimneys are also of brick, having continuous flues from each fire-place and the cellar, and have tops laid in cement mortar. Timber of sawed spruce; siding of pine, "Novelty" pattern. Roof of pine shingles, on spruce lath. Flooring, outside of narrow pine, inside of wide spruce. Plastering three coats and hard finished. The Windows have sash with four lights in each. If desirable the windows facing the verandas may extend to the floor. The sash for these should be similar in every respect to the others. A panel is fitted under the sash and hung to swing like a door. This will be found a very simple and satisfactory method of extending windows to the floor. No special, and, therefore, expensive sizes are required, but all may be of uniform and stock dimensions. When completed they match other windows in the same apartment, in appearance and in their usual operation, and may be readily passed by raising the lower sash and swinging back the panel. Five marble shelves with stucco trusses, are set in the principal rooms. Plumbing is similar to that described in the March *American Agriculturist*, with the addition of bath room fixtures. The veranda roofs are shingled. All valleys and gutters are of tin. The method of constructing these gutters is shown on page 173, May, 1875, *American Agriculturist*. Painting inside and out of pure lead and linseed oil....**Estimate.**—Cost of materials and labor is given with the same figures as that in previous months:

88 yards Excavation, at 25c. per yard	$ 22 00
18,000 Bricks, Foundations and Chimneys, at $12 per M.	216 00
50 feet Blue stone (steps, etc.), at 12c. per foot	6 00
730 yards Plastering, at 25c. per yard	182 50
4,500 feet Timber (as follows), at $15 per M.	67 50
Sills 4x8 in., 170 ft. long. 1 Ridge 2x8 in., 13 ft. l'ng.	
Ties 4x6 in., 170 ft. long. 2 Ridges 2x8 in., 28 ft. l'ng.	
Plates 4x6 in., 112 ft. long. 68 Rafters 3x4 in., 15 ft. l'ng.	
8 Posts 4x7 in., 16 ft. long. 44 Beams 3x8 in., 16 ft. l'ng.	
2 Posts 4x6 in., 12 ft. long. 18 Beams 3x8 in., 14 ft. l'ng.	
Verandas 3x7 in., 60 ft. l'ng.	
100 Joist 3x4 in., 13 ft. long. at 15c. each	15 00
300 Wall Strips, 2x4 in., 13 ft. long, at 12c. each	36 00
450 Shingling Lath, 1¼x2 in., 13 feet long, at 6c. each	27 00
70 bunches Shingles, 18 in., at $1.25 per bunch	87 50
260 Siding, 9½ in., at 28c. each	73 80
Cornice materials	30 00
242 Flooring, 9 in., (inside), at 28c. each	67 76

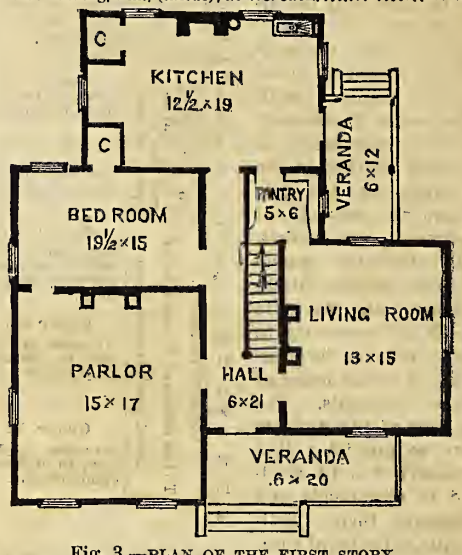


Fig. 3.—PLAN OF THE FIRST STORY.

48 Flooring, 4½ in., (outside), at 25c. each	12 00
2 Stairs, Principal and Cellar (complete)	40 00
6 Cellar Windows (complete), at $3 each	18 00
19 Plain Windows (complete), at $7 each	133 00
5 Dormer Windows (complete), at $10 each	50 00
22 Doors (complete), at $6 each	132 00
5 Verandas, finish (complete)	40 00
5 Marble Shelves (complete)	25 00
7 Closets, finish (complete)	15 00
4 Kegs Nails, $20; Plumbing (complete) $120	140 00
Carting, $20; Painting, $125.00	145 00
Carpenter's Labor (not included above)	175 00
Incidentals	44 94
Total cost	$1,800 00

Exhaustion of the Soil.—A Subscriber in Indiana writes: "A great many farmers in this section, believe that wheat will never exhaust the soil. They claim that they have kept wheat on the same ground for a series of consecutive years, with good results, etc." The mineral portions of the plant—the potash, phosphoric acid, magnesia, lime, iron, etc.,—must come from the soil, and are taken up in a state of solution by the roots of the plants. These substances are deposited in the plant, and if they are removed from the soil in the form of grain,

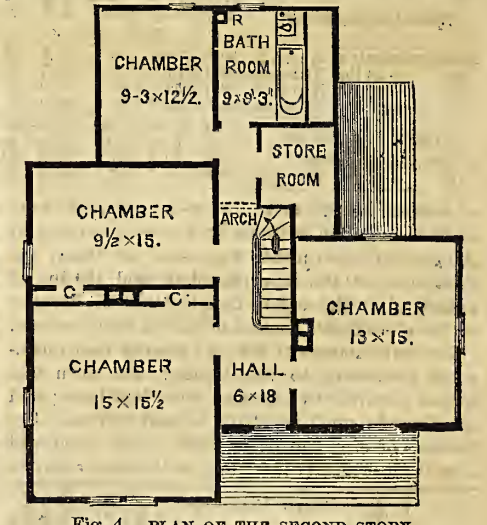


Fig. 4.—PLAN OF THE SECOND STORY.

straw, or any other crop, the soil loses just so much of these essential ingredients of plant growth. If there is a continual outgo, and no income in the form of manure, or other fertilizer, it is only a matter of time for the richest soil to become poor in plant food, and it will fail to produce remunerative crops, and the soil is then said to be exhausted, or "run down." There is no reason why the wheat plant should not tend to exhaust any kind of soil.

The Famous Jersey Cow "Alphea."

The credit and fame of breeding such a cow as "Alphea" the daughter of "Saturn" and "Rhea" ought, we think, to be about as great a satisfaction as to be the producer of that miracle of mechanical art and automatic performance; the Hoe Press.

There are few of our readers, who do not know something of "Alphea"; all such, and others not

THE MOTHER OF THE ALPHEA FAMILY OF JERSEYS, "ALPHEA" (171).

less, will be interested in the beautiful portrait, from an instantaneous photograph by Schreiber & Sons, of Philadelphia, which we present herewith.

"Alphea" was a beauty, regarded either from a purely æsthetical standpoint, or from the more practical one of "handsome is that handsome does." Of still more importance her qualities did not die with her, when in her full prime she sickened and died of an inflammatory disease in no way connected with her extraordinary milk and butter production, but they live in her descendants to whom she imparted to a greater or less degree both vigor of constitution, and a butter-yielding ability.

"Alphea" herself came from the crossing of two animals of similar characteristics, imported by Col. R. M. Hoe, of New York and Morrisania, N. Y., and inherited a most excellent constitution. She was of a color called solid dark fawn with black points—that is, brown of various shades running into nearly black and shading off into light French gray, changing also somewhat with the season of the year. As may be seen from the engraving, she had the characteristic wedge-form of the best milch-cows, light in front and heavy, inclining almost to coarseness, behind. Her head was delicate and the horns light, and incurved, yet the muzzle was broad, and this important and useful feature, as shown, indicates full capacity for effective work. She was, as might be supposed, a good feeder; no cow can give milk in such quantity and of such quality as hers without an abundance of food and ability to digest it. "Alphea's" milk and butter record depend entirely upon the testimony of Mr. Geo. W. Harris, who was Superintendent of "Brightside"—Col. Hoe's beautiful residence and farm in Morrisania, now within the limits of the City of New York. During the greater part of the season through which the tests extended, Col. Hoe was in Europe, hence the matter was left entirely to Mr. Harris. This was in the year 1868, and in a recent article in the "Country Gentleman," by "Hark Comstock," it is stated that Mr. Harris' reasons for not himself publishing the extraordinary record were that the tests were not made in the usual way, and special explanations would need to be made. His explanation is entirely satisfactory to any one who knows either Mr. Harris or Col. Hoe, who gives Mr. H. his confidence, and leave no doubt on the record.

A statement of the yield was made in the October number of last year, page 381, which, we believe, was the first publication of the facts. Doubt was cast upon the statement in certain quarters, but the most rigid scrutiny, as made by the author of the article in the "Country Gentleman," confirms the statement then made. There seems to be no doubt that "Alphea" during this season yielded from 24 quarts of milk a day when fresh, down to 20 and 18 and less, while these tests were being made. The churn in which the milk was churned, and the whole milk was used every time, held conveniently 18 quarts, and this amount well averaged was churned every time, and the yield of butter was in no instance less than 3 lbs. This would make the yield 4 lbs. a day while she was giving 24 quarts of milk, which, it requires very little calculation to see, is the remarkable total of 28 lbs. a week.

This has never been claimed—the writer of the articles entitled "Among the Farmers" claimed 22 to 24 lbs. per week, "Hark Comstock" claims 25, but we see no reason why the old cow should not have the full meed of her wonderful record, and be set down as leading the World of dairy cows, with the astonishing record of 28 lbs. of butter per week.

"Alphea" bred to her own brother, "Jupiter 93," produced a line of fine looking, good-constitutioned cows and bulls which have been rather closely bred together, with now and then a promising out-cross.

Among the Farmers.—No. 52.

BY ONE OF THEM.

"More Nice than Wise."

Can one be "more nice than wise" about milk? There is a satisfaction in being very particular, and fastidiously nice and neat in personal habits, about what one eats and drinks, and all that, but we can carry the thing too far for our own comfort, and for those around us. One of my neighbors will buy no article of food a second time, at a store where the salesman wets the finger in the mouth to pick up the wrapping paper more easily. He is shocked at the idea of carrying off another human being's saliva; and yet my friend will sit in a crowded rail-car or room, and breathe the vital air second-handed, by the hour.—While it is well not to be too nice about some things, in the matter of milk, I think there is the highest wisdom in extreme niceness.

Earthen, or Tin, Milk Vessels.

I fancy I can tell the difference in the taste of milk set or kept in earthen or glass, and that set or kept in tin; nay, I do not think it is a fancy or a piece of "fast-idiocy"—as a jocose friend would say, as he once remarked he was no "fast idiot."

I found in use on Col. E. S. Sanford's farm, last summer, some curious milk vessels. They were wide-mouthed jars, or ewers, of common earthen-ware, glazed inside, unglazed outside, with one or two handles, according to size. I find that they are a good deal in use among Germans in and about New York and the group of surrounding cities and villages. The sizes are two, three, four, and six quarts—a three-quart jug is shown in figure 1, and a larger one in figure 2. They have covers which fit into a rim like the lid of a butter crock. They are filled with milk and set into water in pans or tubs—or other crocks—and the water is renewed as often as may be convenient. The outside is so porous that the water, if it once wets the surface, is continually drawn up by capillary attraction. It of course evaporates all the time, thus notably cooling the milk. I procured some of these German milk crocks, and found them excellent where one has but a few quarts of milk—but we were disappointed in the degree of coolness produced. I am satisfied that for some reason, milk will keep sweet much longer in earthen than in tin vessels. When travelling at the West—I mean what we used to call the West, properly the Interior—and at the South, I have noticed coarse earthen pans with flat rings, quite thick and heavy, covered with a dark clay glaze. Upon inquiry I was surprised to find that they were milk-pans, in fact—except among people of New England or Eastern origin—the common milk-pans of the country. I sketch one of them (fig. 3) from memory, and a stack of them in figure 4, to show how solidly they pack. They are, I should say, 5 inches deep and hold, when filled to the proper hight, from four to six quarts.

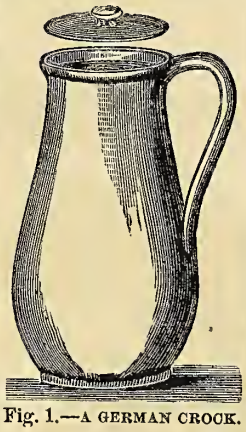


Fig. 1.—A GERMAN CROCK.

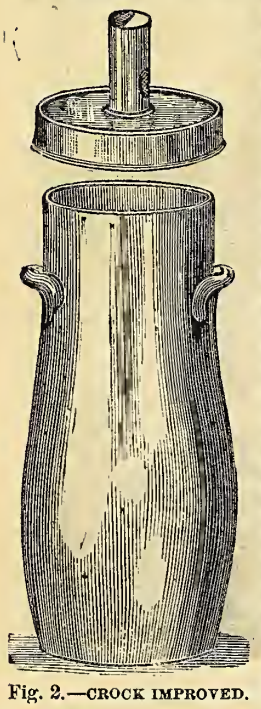


Fig. 2.—CROCK IMPROVED.

Very neat milk pans, made of yellow or white ware, are sometimes used and are by far the best round shallow pans. They are called by the trade "nappies," and are round or oval, shown in figures 5 and 6. The convenient sizes hold 4 to 6 quarts; the 8-quart ones are heavy to handle. The round ones with a lip were formerly made extensively for the southern trade, but less so now. Square dishes of the same ware are called "puddings;" they are rectangular with somewhat rounded corners, and in common use as pudding dishes, but are admirable milk-pans when small quantities of milk only are kept. After the milk is two days old, in ordinary weather, the cream may be loosened from the sides of the pan and slipped off from the skim-milk by a dextexous movement, with greater ease than from pans of any other form. See the process in figure 7.

Fig. 3.—AN EARTHEN PAN.

It must not be overlooked that there is little lost room on shelves or tables where these pans are placed. Cream is often "slipped" from round pans of both tin and earthen-ware, but a good deal of milk is liable to go with it. The influences of the weather on milk are well known; we all think thunder and lightning sour milk, and the warmth and cold, as well as the moisture and dryness of the atmosphere produce notable effects. These effects are increased by metal, and diminished by glass, porcelain, and earthen-containing vessels.

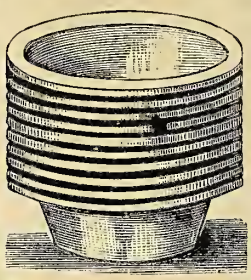


Fig. 4.—STACK OF PANS.

The Peculiar Flavor Caused by Tin.

We are so accustomed to use milk which has been drawn, transported, or set in tin, that most of us are quite unaware that a foreign flavor is almost uniformly imparted. Perfectly bright, new tin, probably imparts no perceptible flavor, but that which has been somewhat worn, scratched, or scoured, flavors the milk at once. It is fair to conclude, then, that it is the iron and not the tin which gives the flavor; for where the iron is laid bare, from any cause, it is this and not the tin which is primarily acted upon by the acids of the milk. The least action causes the formation and disengagement of hydrogen, which, either by itself, or in the form of some of its many compounds, of which I know little, I believe is absorbed by the milk and imparts a peculiar flavor. This taste is more perceptible in skimmed milk than in the cream—if it be at all observable in cream and butter.—I do not at present know of any reason why the so-called

Fig. 5.—ROUND NAPPY.

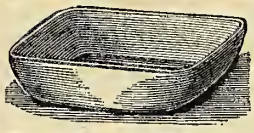


Fig. 6. "SQUARE" NAPPY.

Granite Ware,

if the glaze which covers the iron basis does not crack and does not contain lead in such quantity as to render the glaze partially soluble, should not form an excellent substitute for both tin and earthen-ware for setting milk, and other milk vessels.

Bitter Butter.

Few persons will be troubled with bitter butter after this article is before the readers of the *American Agriculturist*, because grass feed, fresh cows, and the season of the year prevents its occurrence. My attention has, however, been repeatedly directed to the subject the past winter, and I am certainly inclined to favor the view that the bitterness arises from the milk which separates from the cream after skimming, and which is usually churned with it. It has been repeatedly suggested that this milk or sour whey should by all means be drawn off before churning; but I do not recollect that the

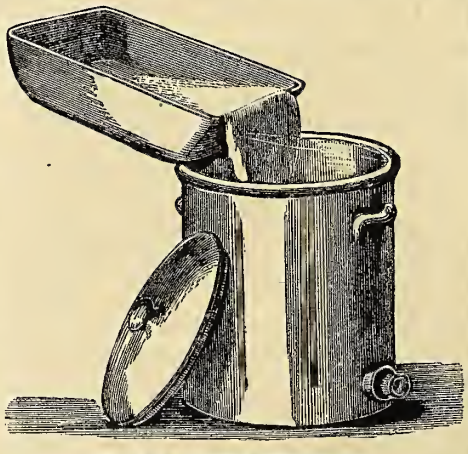


Fig. 7.—SLIPPING THE CREAM.

Washing of Cream

has ever been recommended. I have proved that it is easily done in this way: one may draw off the milk from the stone cream-crock—like the one shown in figure 7—or from any other cream vessel; add an equal quantity (or say, a portion equal to one-fifth of the cream), of skimmed milk, and stir the whole together. This may stand awhile, and be drawn off before churning, and more may be added if one wishes to churn with a portion of milk, or the milk of the second washing may be drawn off and the cream then *cleansed*, *washed* and *rinsed*, and churned by itself.

This washing of cream is a matter which I have experimented with very little, and know little about. So far as I know it is an original idea, and I would be glad to have older and wiser dairymen—and I am not properly a dairyman—experiment with it. That cream may be washed with sweet milk, sour milk, whey, buttermilk, water, or brine, is certain. What the effect of washing with these fluids will be upon the butter has yet to be proved, so far as I am aware. I certainly should expect the best results from washing with sweet skimmed milk, water, or brine. The use of brine is strongly favored by a very sensible Vermont dairyman, with whom I was recently conversing. He is a great advocate of brining butter, and uses three strong brines in preparing his butter, which, by the way, he finds to add the equivalent of a quarter of an ounce of salt to the pound. It may be that he regards the brine as applied to washing cream with too great favor. Nevertheless brine is the butter-maker's sheet anchor in modern butter-making, and I see no reason why it should not answer—and answer well—for washing cream. Thus far I have only experimented in the use of skimmed milk and water.

Something About Milk.

The following remarks, abstracted from a foreign scientific journal, are applicable to this meridian, and may be useful to producers and country users of milk, as well as to consumers who live in cities.

First of all, it should be understood that a hard service is required of milk. Nearly the whole of the vast demand made upon it by civilization is outside of its natural functions, and is—so to say—rather unfair treatment of a very sensitive nature, for *Nature* never designed milk for exposure to the air, or for much variation of temperature. It was intended to be taken directly from the fountain. It is what chemists call a *transition compound*, therefore, changeable and transitory, and requiring delicate handling. It comes directly from the blood, which is very similar, it naturally passes, without delay, exposure, or appreciable change of temperature, from the body of the parent to that of the offspring, there to be immediately converted to blood again, and so used in growth and sustenance. How can we expect that such an exquisitely delicate compound will not occasionally resent outrageous changes from heat to cold, and cold to heat, and the ruthless joltings of transportation and contact with air of every degree of impurity?

To refer only to the latter, which is probably least understood. Almost everything is capable both of giving out and of imbibing *effluvia*, or vaporous compounds, which are often quite beyond the reach of chemical estimation. Probably but few persons outside of scientific circles are aware that it would be next to impossible to devise a compound liquid more susceptible to effluvial influences than fresh milk. It possesses a slight and agreeable effluvium of its own; and also a wonderful aptitude for receiving and retaining that of every sort of volatile matter approaching it. Oily matters promptly take up odoriferous principles of every kind; the microscopic globules of the rising cream, in their state of minute subdivision present a large surface, absorbing with extreme avidity. When the milkman leaves the daily supply of, we will suppose, pure milk, this is what is likely to happen to it in England, according to our narrator:

"It is poured at once into a clean earthenware jug." [The Englishman means *pitcher*, but a fashion

only about fifty years old has substituted the word jug for pitcher so largely, that few educated Englishmen know, as we do, what the two words denote in our common English language]. "This is stood [he means set] say on a stone shelf in the larder, to keep it cool and free from taint. Its companions there are a joiut of cold meat, in its gravy, a few unfinished tarts, a large bowl of scrap bread (with incipient fungoid growth), a couple of dozen of eggs,not all fresh ; underneath, the cheese; overhead, a jar of onions in pickle ; in the near distance, a few head of game in an advanced state of

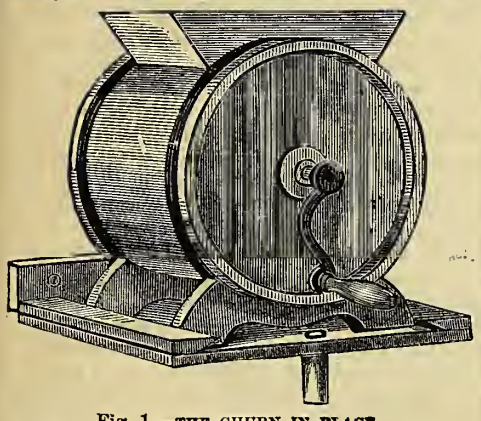


Fig. 1.—THE CHURN IN PLACE.

——well, 'keeping,' and last, not least, a closed window. Now, what is the action herenpon ? A thousand to one the temperature of the milk when received is different from that of the air, whether higher or lower. As soon as it comes to rest the surface next the air becomes warmed or cooled, as the case may be, and by giving place to other portions, sets up a series of gentle currents, by means of which every part of the fluid is successively brought into contact with the air, and its countless crowds of butter-corpuscles, containing fatty matter iu a high state of subdivision, are enabled to expose the greatest possible extent of surface. Now, it is scarceiy the fault of that milk if, in ten hours' time, it has failed to lay by at least a trace of every shade of effluvium which has had a chance of circulating near it. And yet, when the pardonable nastiness of that milk is commented upon at breakfast, there will not be found wanting some one to exclaim: 'What *can* those people feed their cows on ?' "

To Fasten Down a Churn.

Mr. E. A. Cooley, Sonoma Co., California, sends sketches of a handy device of a pattern in frequent use, for fastening a churn to its place upon the

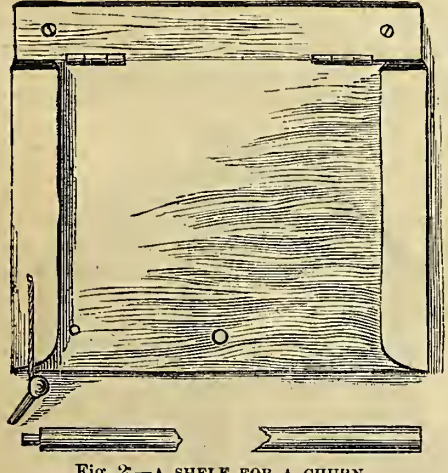
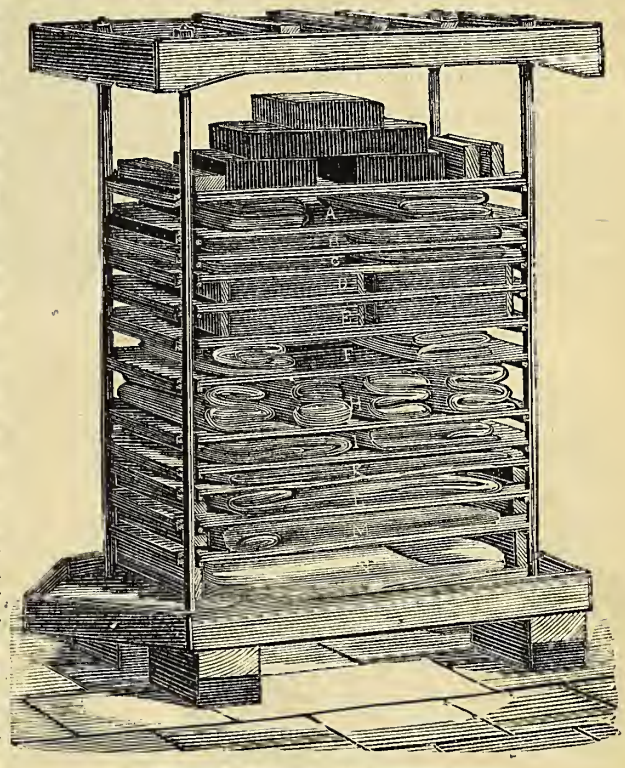


Fig. 2.—A SHELF FOR A CHURN.

table while in operation. "To make it, two cleats, beveled on the under side, are nailed to a board in such a manner, that when the churn is slipped in place, its feet will closely fit under the cleats, and be held by them." The arrangement of the cleats of course will depend upon the size and kind of the churn. In Mr. C.'s case, it is as shown in figure 1. "For convenience, we have the arrangement hinged to the wall, and supported by a movable standard," which is shown in figure 2. The table when not in use, hangs against the wall, and is entirely out of the way—the movable standard, which reaches from the floor to the shelf, may be kept from going astray by providing it with a cord, which keeps it always at hand when the table is desired for use.

Butter Making Without Churning.

Probably most of our readers have heard of the method of making butter by placing cream in a bag of some close fabric, and burying it in the ground. When the bag has been buried for 24 hours, it is taken up, and the contents are found to be converted into butter, which only needs washing to be ready for use. In this case the bag is subjected to the pressure caused by the weight of the earth upon it, which forces out the liquid portions of the cream, that are at once absorbed by the surrounding earth. Acting upon the principle that simple pressure within a close fabric is sufficient to separate the butter globules from the liquid portions of the cream, a Prussian lady, Mathilde Ziemann, of Quedlinbourg, has invented a press for the purpose, and also to remove whey from the curd, in the making of cheese. As this method of butter-making is attracting much attention abroad, we give our readers an engraving of the press, from the *Journal d'Agriculture Pratique*, with an abstract of the account there given. As the making of cheese by pressure presents nothing new, save the pressing the curd in thin layers in bags, we omit that use of the press for the present, and describe the method with butter. The press consists of a base, sufficiently inclined for liquids to run off, from which arise four iron rods supporting the top. Press-boards, or shelves, are provided with notches at the corners to receive the iron rods, upon which they move up and down. These boards are about 3 feet long, and half as wide (really a metre=39 inches; the precise size is not important). A supply of strong linen cloths about a yard long is required.

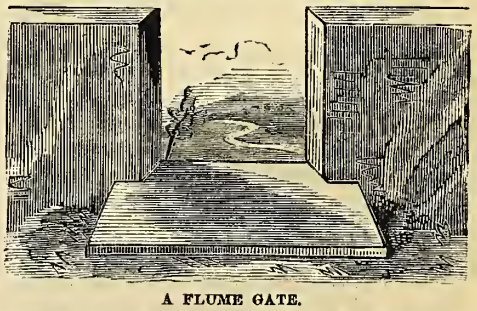


A PRUSSIAN BUTTER, AND CHEESE PRESS.

Two cleats to each board, to raise it from the next 1½ inch, and four frames 16 inches square, and 2¾ inches high, are necessary. One of the pieces of linen being well washed, is laid over one of the frames, and about four quarts of cream is turned upon it; the cloth is then carefully folded in such a manner, that the cream is completely inclosed; it is then placed on the press (as at E. D.), where it remains without any pressnre for 10 or 12 hours. At the end of this time, the cream will be found to be solidified, and the cake may be removed from the frame, and put in press between the upper boards C; afterwards it is put between the boards at B, which are separated by a cleat for 1¼ inch. Lastly, the cloth being folded several times upon itself, is placed at the highest board, where a number of bricks or other weights are used, to give sufficient pressure. At the end of two days, all the butter that the cream contained, will be found in the cloth. Nothing is said in the article as to the after treatment of the butter; in Europe salt is rarely nsed. In making cheese, the curd is placed in bags, and after some hours, these are folded, and the pressure continued as seen in the lower part of the press, both operations, butter-making, and cheese-making, being carried on at the same time. One of the chief advantages claimed for this method of making butter, is the avoidance of loss ; in churning, a large nnmber of butter globules remain in the butter milk, which have escaped the operation. The German authors claim, that the yield of butter is increased by 10 per cent. Another claim is, that the water is much more completely separated, and that on this account, butter thus made, will keep much better than that made by churning. It will strike most butter-makers, that this process has one marked fault—the length of time during which the butter is exposed. Nothing is said about quality, but we should expect that it would not be improved by two days' exposure. On the other hand, the linen cloth, having its pores filled with liquid, would pretty effectively exclude the air. Another thing will strike a practical person, which is, the great amount of circumstance, and needlessly cumbersome appliances to accomplish the end in view. If butter only is to be made, two or three boards, and the necessary weights, would answer quite as well as the press. The process is a very simple one, and it will be an easy matter for any one to test its efficacy. The article referred to, places much stress upon the importance of carefully washing the linens, and recommends that they be soaked for some hours in water, to which some Sal-Soda has been added.

An Irrigating Gate.

A head-gate for lateral irrigating ditches, may be made very simply, by cutting out a piece of the middle of an inch board with a bevel cut, the slope of the cut being outwards, towards the lower, or down-stream side of the board. This is necessary to give a perfect clearanec to the stream, and avoid adhesion of the water, which would lessen the flow. The board is built in the bank, and a foot-



A FLUME GATE.

piece is fastened under it, as shown in the engraving, to prevent the stream from working under the gate. The lower edge of the board and gate should be below the level of the ditch, and the board should be long enough to prevent the water from cutting around the ends of it. As a very small leak in water channels, will soon become a large one, if not guarded against, care should be exercised to avoid all danger of washing around the gate and joints in irrigating ditches as well as in dams.

Corn Markers are of nearly all sizes and shapes; but may be divided into two general

classes; those which make the marks with runners, and those that have pegs of some sort, which are drawn through the mellow soil. It is not necessary for us to decide which of the many home-made kinds is the best; but it is evidently the one that makes the best marks in the quickest time, and with the greatest ease. One drawn by two horses, which makes several marks or rows at a time, and permits the driver to ride, is certainly useful in large fields. We now only suggest here, that whatever kind is to be used, it should be looked to, and put in readiness for the work it is to do.

A Barn Corn Crib.

On small country places, a multiplicity of buildings is neither economical nor desirable. A corn crib, however, is a necessary evil, and it may be provided for with much advantage, in a corner of the barn. An extra building is thus dispensed with, and the corn is where it can be reached very conveniently. The crib may be built in the corner of a barn, figs. 1 and 2, on the upper or lower floor, as it is the most convenient, and the wall may be opened and fitted with lath work, and protected by falling

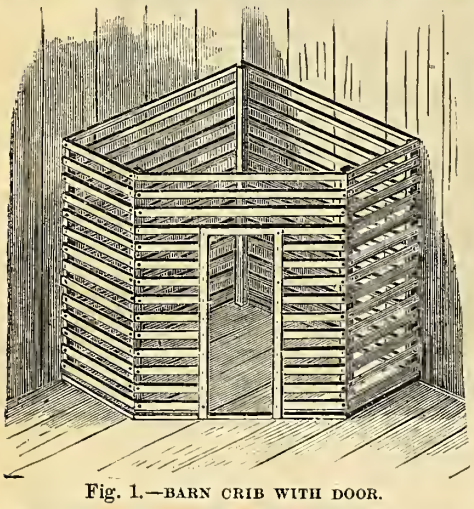


Fig. 1.—BARN CRIB WITH DOOR.

shutters when necessary, as in figure 3. When the corn is thoroughly dry, the shutters may be closed.

Are Pigs or Shoats Best for the Villager?

To the farmer who raises his own swine for fattening, and keeps over what he cannot sell, there is not much choice. It is his custom to fatten what he has on hand, and those are very often fall pigs when the sale is rather dull. The villager always buys the stock he wants to make pork of, and can generally put in his pen either wintered swine or spring pigs. Some always keep one or two pigs in the pen, and kill in the fall, and spring, putting

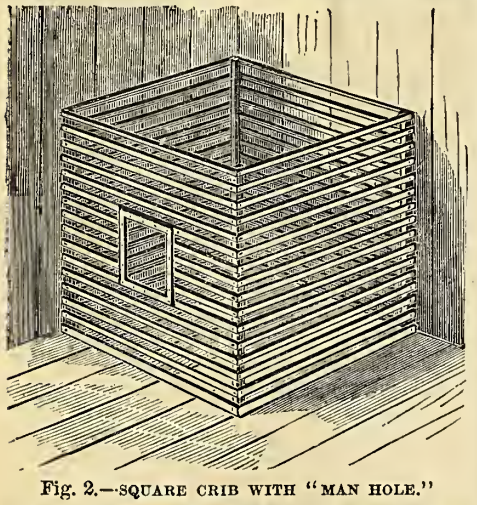


Fig. 2.—SQUARE CRIB WITH "MAN HOLE."

only pig pork into the barrel, and using only pig hams and shoulders. The great objection to this course is the increased expense and trouble of making pork in the winter, in all northern climates. It takes a great deal of food to keep up animal heat in frosty weather and adds twenty-five per

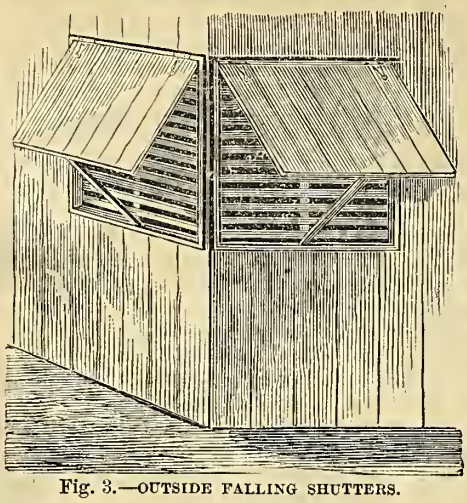


Fig. 3.—OUTSIDE FALLING SHUTTERS.

cent to the cost of making pork and hams. When made they are no better than the summer made meats. The waste of the kitchen may better be fed to poultry than to swine, and there is no economy in keeping pigs to save these wastes. Others make better calculations, and buy pigs or shoats, as suits convenience early in spring, and feed all the pigs will consume until November, when they slaughter them in the first hard freezing weather about Thanksgiving. The choice between pigs and shoats depends mainly upon the prices. At the same price per pound shoats are generally preferred. But not infrequently they are much cheaper from the supposed superiority of pig pork. But there is not much foundation for this distinction, for the wintered pig weighing 80 to 100 lbs., and slaughtered at Thanksgiving, makes as nice hams and shoulders as the spring pig. His frame is already built, and other things being equal, the food consumed will give a larger amount of flesh. The hams will be larger, the pork thicker, the lard more abundant, and on the whole more desirable for family use. There is no difficulty in supplying all the hog products needed in a family; pork, salt and fresh, ham, bacon, sausages, and lard from the summer fattened shoat. With pigs, the hams and lard often give out long before killing time. Whichever are selected, feed regularly and abundantly all that they will consume. A squealing pig disturbs the whole neighborhood, and at the same time impeaches the wisdom of the owner.

The Distribution of Labor on the Farm.

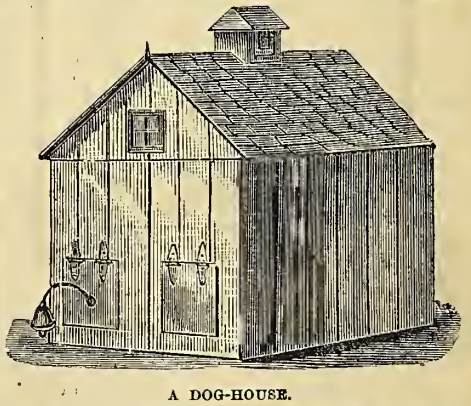
There are about as many kinds of farm management as there are kinds of men. To a certain extent this is natural, because there are so many different products of the farm, almost any one of which may be taken as the primary, and all the others thus become of only secondary importance. If butter is the leading "crop," the system of the farm will be of one kind; if wheat is the primary product, the methods pursued will be different from those for butter, and this again will not be the same as when sheep are the main source of the farmer's income. Circumstances of soil, climate, nearness to market, personal tastes, etc., will decide these matters. But whatever the system, whatever the leading crop grown—and we by no means believe that in all cases, or even in most cases, it is always better for a farmer to have a crop that is *the* leading one—there are certain general principles that should be binding upon one so soon as he becomes a farmer. He who by the soil would thrive, no matter what he is to make that soil produce, should so plan his work that there will be the least number of idle days, in fact, this means that there should be no days when the farmer has, as the common expression goes, to "kill time." Every worker of the soil, whether he owns or rents the soil, and is, therefore, working for himself, should put a definite market value upon his labor. This very many farmers fail to do, and overlooking this important fact, it easily and naturally becomes a source of loss. It is as much to the farmer's advantage to have a full supply of labor for each and every work day, as for the day hand that gets his living from his daily labor.

The vital importance of the proper distribution of farm labor throughout the season—yes, the whole year—being accepted as a leading fact in profitable agriculture—the question is, how to make the most of it? In the first place it demands a careful planning of the whole season's work, if not the work for several years. This plan should account for work for not less than 290 days in the year—and the work of each of those days should be of such a character as to pay—not work to be done for the sake of doing something, but seasonable, profitable labor. This principle at once points towards a variety of farm crops, mixed farming, a rotation of crops, the ideal farming, and the one towards which substantial agriculture is tending.

A single example will suffice to illustrate and enforce the point. Let it be supposed that a farmer is growing roots, and that it is to his advantage to have the labor of the care of his roots distributed along through the season. Instead of putting his whole land into Swedes, and that in early summer when other labor is pressing, he can sow a portion of the land to Mangels as early as the ground can be worked, and later, after the Swedes are in, a part of the field may be put into Flat Turnips, which grow rapidly and must be fed so soon as grown. If soiling is practised the Flat Turnips may follow the early rye in July. In like manner there are many cases where the work that would otherwise come "all in a heap," can be distributed through the season, and "all hands" can be kept for several months and furnished with steady and profitable labor. The farmer who can best equalize his work and portion to each week and month its part, other things being equal, will be the most successful.

A Farm Dog Kennel.

A correspondent from Morris Co., N. J., sends a sketch of a dog kennel, which is far more comfortable for the tenant than is usual with such buildings. It is common for the dog to be used as a homeless vagabond, and to be left to find shelter as he best can on the lee side of a fence, or in a hole under the barn. The dog may have sagacity enough to know when he is well or ill treated, and he may very reasonably lose his self-respect, and take to evil courses, such as prowling abroad, marauding and sheep killing, when not taught better, and provided with decent quarters at home. The conduct and attitude of a hardly used, half starved cur, is entirely different from that of a well fed, and decently kept dog, and every one who keeps a dog, should certainly take pains to treat him well, and train him respectably. A shelter of some kind should be provided, which the dog should recognize as his home, and the more comfortable this is made, the more contented and home-

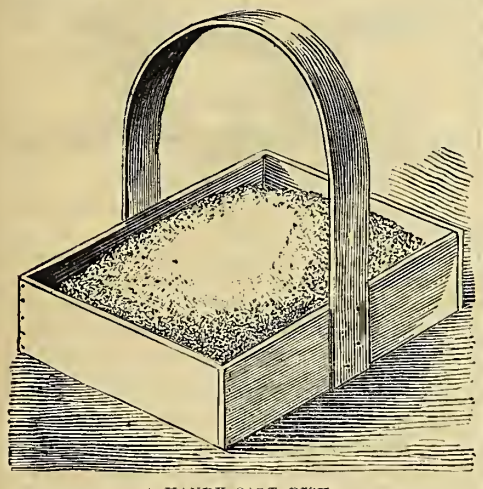


A DOG-HOUSE.

keeping he will be; not to speak of the freedom from disease and vermin to be enjoyed. The kennel here described, is 7 feet long, by 3½ wide, and has two doors, one opening inwards, and one outwards, the latter door is provided with a bell, by which the owner can tell when the dog goes out at night. In summer one door may be raised for ventilation, but in the winter both should be let down.

Salt for the Live Stock.

There are some who claim that the well known liking of our domestic animals for salt is due to education, that it is an unnatural appetite, that in a state of nature animals do not have salt, and assert their belief that it does more harm than good. It would be a sufficient answer to these persons that our animals are not in a state of nature, and what the pre-historic cow and horse had, or did not have, has nothing to do with what shall be given to their descendents. Those who



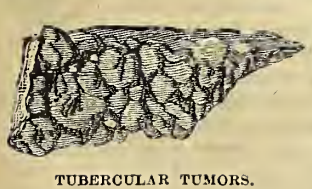
A HANDY SALT DISH.

write and talk so earnestly against salt are not many, and are usually people of notions, which they mistake for ideas. The great majority of cattle raisers and farmers are fully convinced that salt is necessary for the best health of farm animals, and practice what they believe. The amount of salt required is small, and it should be given at frequent intervals. If a little could be given each day it would be best, and if with the food, as we are accustomed to take it ourselves, it would be so much the better; but such a method is hardly practicable. Supplying salt once a week will answer, and this is the usual interval between saltings, if salt is given at all. Some special day or time in the week should be chosen as that for salting the domestic animals, and then it should not be allowed to go past without dispensing, what some one has termed, the "seasoning of the week."

An engraving of a handy salt dish is given herewith, which, simple as it is, better answers the purpose than any other that we have used or seen used. It consists of a low box made of hard wood with a thick bottom, and a handle made of hickory—a piece of heavy barrel hoop will do—nailed upon the sides as shown in the engraving. In dispensing the salt to stock in the open field, it should be so placed that all the animals can get their fair share, and again it should not be thrown upon the ground where it is largely lost, or if eaten it must be with a quantity of earth. Flat troughs should be provided even for economy's sake.

Scrofulous Diseases in Domestic Animals.

An observing friend had a fat cow slaughtered, and finding in the lining of the cavity of the abdomen a large quantity—nearly a bushel—of strange objects, sent one of them, which is shown in the engraving. It proved to be a collection of Tubercular Tumors, of a kind often found in animals inclined to scrofular diseases. They are due to a constitutional disease that is too widely prevalent in all kinds of our domesticated animals. Scrofula may be inherited, or it may be developed by the conditions of life that have an influence in lowering the vital powers—such as protracted derangement of the digestive organs, however caused—deficiency in the quality and quantity of food, impure water, damp, filthy stables, defective ventilation, exposure to cold and wet and other unsanitary conditions. Animals in confinement are more liable to scrofulous disease then those of the same kind in a state of nature. Dr. Aitken says: "The stabled cow, the penned sheep, the caged lion, tiger, or elephant, are almost invariably cut off by scrofulous affections, no doubt due to deficient ventilation, and the abeyance of normal exercise of the pulmonary function." When the constitutional defect is inherited, the ordinary exciting causes of disease are liable to develop it, and it may assume a variety of forms according to the organ where the disease is localized. The heredity of the disease is often not suspected from the varied forms it assumes in different generations. The lungs of the parents may be affected when the disease is known as consumption, and the offspring may be affected with scrofulous swellings, marasmus, or wasting—or chronic bowel complaints. The disease may not show itself in the acute form for several generations, and may be even unsuspected until after death, when it may be recognized by tuberculous tumors that, as in the case under consideration, have not reached the stage to produce serious constitutional derangements. A careful selection of breeding stock should be made to avoid any hereditary tendency to the disease. When fully developed, the acute scrofulous complaints do not yield to any treatment, but run their course with the most unfavorable results. Prevention, by the observance of the best sanitary conditions, is the only means of counteracting the constitutional defect. We cannot too strongly insist upon pure air furnished in abundance to all of our domestic animals confined in barns, stables, etc., and fresh water and wholesome food at all times and places.



TUBERCULAR TUMORS.

A Manure Sled.

A sketch and description of a manure sled comes from H. H. Cooper, Lancaster Co., Pa., who thinks is "the handiest and cheapest sled he has ever seen." It is very simple in its construction, as

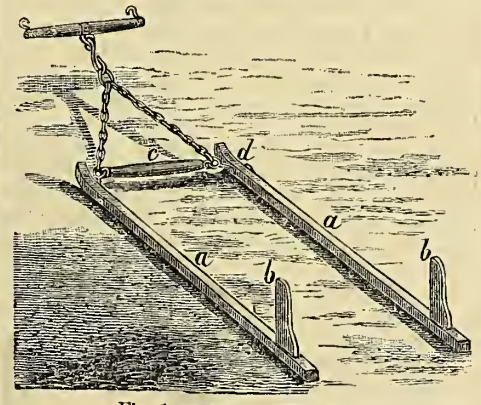


Fig. 1.—THE MANURE SLED.

shown in figure 1. The runners, *a*, *a*, can be of any desired length from 4 to 6 feet, and may be made of 3 by 4 pine scantling. The upright pieces, *b*, *b*, set in loose sockets in the rear ends of the runners, and can be easily removed. The chain for the attachment of the whiffletree is secured to the forward ends of the runners by staples put in at an angle of 45 degrees. The ends of the two runners are kept about 20 inches apart, by means of a spreader, *c*, placed between, and fastened to the ends of the chain. The manure is loaded upon these two runners, being piled up in a rather narrow ridge, (fig. 2). When the place is reached where the manure is to be deposited, the two standards, against which the manure is pressed somewhat tightly, are removed. By starting the horse the sled is drawn from under the manure and the sled is empty, and, with the standards replaced, it will be ready for another load. "There is no trouble in turning as with the common long sled, and no second handling of the manure, to say nothing of the cheapness and simplicity of the arrangement." We are not aware that this simple farm implement is patented.

Fig. 2.—METHOD OF USING THE SLED.

Handle for a Cross-Cut Saw.

Mr. E. M. Goodale, York Co., Me., sends drawings of a handle for a cross-cut saw that is coming

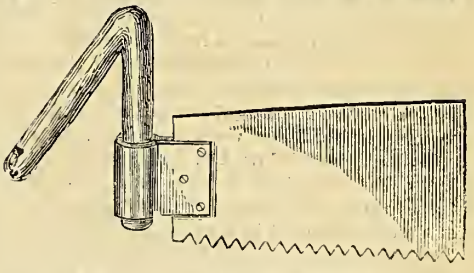


Fig. 1.—A CROOKED SAW-HANDLE.

into very general use in that locality. The handle, as shown in figure 1, consists of a "natural crook" from a branch of some hard-wooded tree, in the form an inverted V, one arm of the crook being fastened into the saw clasp, while the other, which is in an inclined position, furnishes the handle for the operator. Figure 2 shows the method of procuring the handle from the fork of a small tree, or from the junction of one branch with another on a large tree. The use of this handle, our correspondent claims "saves the muscles of the shoulder, as a person using the handle can stand upright and saw, while with the straight handle the elbow must be kept level with the work." Any device that will make easier the work of sawing logs with a cross-cut saw will be welcomed by the many who have more or less of this shoulder-aching work to do.

Fig. 2.—SELECTING THE NATURAL CROOK.

Revival in the Sheep Interest.—There are at present more calls for the names of raisers of pure-blood sheep, than for a long time. A short time ago, a gentleman wished to know where he could purchase several car loads of the best Merinos, mostly rams, for shipment to the Southwest. Not only is there a revival as regards the number of sheep to be raised, but a strong tendency to grow only those of the best breeds. The "boom" in sheep-raising, as the slang of the day has it, is a healthy one, and one to be encouraged, moreover it seems likely to last for an indefinite period of time.

Hay Sweeps.

We have requests for a plan of an implement to collect hay in a field and carry it to the stack or barn without loading it upon a wagon. This may often be done with profit if the ground is comparatively level and the stack or the barn is not far distant. The Hay Sweep, an implement that has been in use for some time, is one that well serves this purpose. The construction of the Hay Sweep may be learned from figure 1. It consists of a

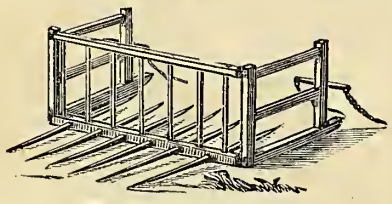


FIG. 1.—A HAY SWEEP.

large horse rake, of the "revolving" sort, and a stout frame attachment, as shown in the engraving. Two horses are required to work the Sweep, one attached to each end and guided by boys upon their backs. When in action, the horses pass on each side of the windrow, the Sweep as it passes along gathering up the hay, as seen in figure 2. In this way a load of 500 pounds can be quickly gathered up and taken to the place of deposit. In unloading, the horses are turned back and the sides of the frame swung around, so that the back side of the rake becomes the front; the Sweep is then drawn away from the hay and is ready for another load. The dimensions for the construction of the Sweep here given are by John J. Thomas, in his work entitled: "Farm Implements and Machinery," from which useful volume we borrow the engravings.

Main scantling below, 4 by 5 inches and 10 feet long; the one above it same length and 3 by 4 inches; these are three feet apart, connected by seven upright bars 1 by 2 inches, and 3 feet long. The teeth are flat, 1½ by 4 inches, 5 feet long, or projecting 2½ feet each way; they are made tapering to the ends so as to run easily under the windrow....Each gate (end) consists of two pieces of scantling 3 inches square and 3 feet long, united by two bars of wood 1 by 2 inches, and a third at the bottom 3 inches square and tapering upwards, like a short runner....The whiffletrees are fastened a little above the middle of the gate, and should be so arranged that they may be raised or lowered so as to be readily adjusted. Mr. Thomas estimates that the Sweep may be made for $6 or $7.

The rapidity and ease with which the hay in

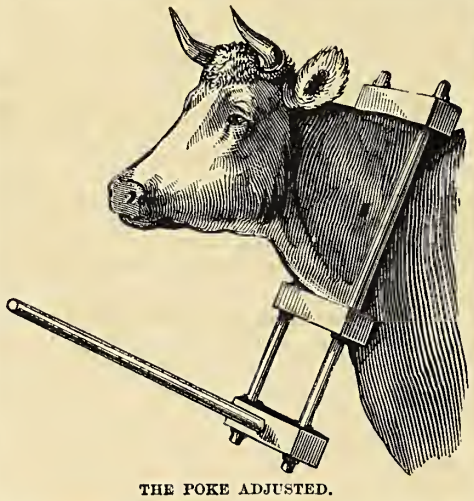
FIG. 2.—THE SWEEP IN USE.

many cases is gathered with this implement renders it one of great service to many farmers, and at just that hurried time when every aid is a help indeed.

Harrows and Harrowing.—Harrows, of which there are a great number of styles, from the old "A" "drag," with its great wooden teeth, to the steel, square hinged harrow, and those of a still later form, provided with wheels, and a seat for the driver, all have a common object to accomplish—the thorough pulverization of the soil, and mixing of the various fertilizers that may have been added, and thus make an acceptable bed for the seed. The easy access of air to the soil, which follows from a thorough use of the harrow, is a matter of great importance, as upon it depends largely the formation of available plant food, and therefore the growth of the plant, and success of the crop. The young growing roots—the ones that do most of the absorbing of food—can much more easily extend themselves through mellow soil, and reach the food that such a soil has in keeping for them.

A Safe and Handy Poke.

A poke is often required to restrain breachy animals, and a sketch of what seems to be a very useful one is sent by Mr. F. Coney, Van Buren Co., Mich. From his experience with this poke he claims that it does not cramp the animal's neck while eating or when lying down. Also, that it thoroughly prevents jumping, and is perfectly safe. It differs from the ordinary poke in having the "bow" much longer, so that the block carrying the projecting pole is brought down to about the bend of the knees. Mr. C. says that this poke is so thorough in its action that it is troublesome for the animal to get over the "bars," as they are ordinarily let down for cattle to pass. "This is no objection, as the animal most likely received its first lesson in jumping by being forced through half open bars." A poke to be efficient should prevent jumping at



THE POKE ADJUSTED.

the lowest and weakest point in a fence, and the one shown in the engraving appears to be such an one.

Links for Mending Chains.

It is often a great inconvenience to have a chain break, especially when many miles from home, or far from a blacksmith's shop, and the whole progress of the work comes to a standstill. A link like that in figure 1, is designed to come to the rescue in just such cases as this. Any blacksmith can make a number of them at a trifling cost, or one handy with the tools, can shape them himself. One or more of these can be carried in the pocket of the over-alls, or in some place about the wagon, plow etc., and thus the farmer, teamster, or lumberman, can go armed against breaks that are always apt to occur. The engravings show the construction, and the method of their application. The importance of an easily adjusted link to a broken chain, has led the Ingalls Manufacturing Company, to invent a link for the purpose, upon which they have secured a patent. This link is a split one, with the two parts so united by a rivet, that it can be opened and adjusted to the chain, without the aid of any tools. This link is shown open in figure 3, and closed in figure 4. These handy links are now quite generally in the trade, and can doubtless be had at most hardware stores. A small sum invested in a supply of these, or of the home-made links, may save a much larger sum.

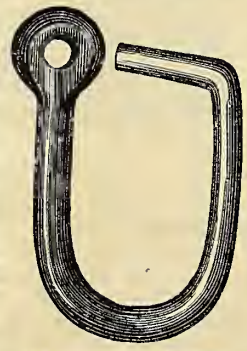


FIG. 1.—A CHAIN LINK.

The Robin Question Again.

Professor S. A. Forbes, of the State Normal University of Illinois, in his elaborate report upon "The Food of Birds," published in the Transactions of the State Horticultural Society for 1879, gives a considerable space to the Robin. During the season 41 stomachs of this bird were examined and the insects found therein determined and placed in a tabulated form. During the month of March the food of the two specimens examined was very largely of grasshoppers and insects which feed up-

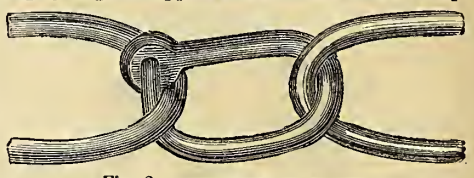


FIG. 2.—THE LINK IN PLACE.

on decaying vegetable matter. For this month nothing can be said against the Robin. In April eleven birds were killed, and the food was found to be much more varied than for the previous month. The record stands: caterpillars, 32 per cent; beneficial beetles, 23 per cent; scavenger beetles, 12½ per cent. "These birds have apparently done very much more harm than good during this month, eating predaceous beetles, which would probably have destroyed many more noxious insects than were found in their stomachs." For May much the same record is made, showing very little in the Robin's favor. During June 55 per cent of the food comes under the head of *fruits*, and of this the largest part is cherries. Though the food of the Robin was largely fruits, there were many injurious insects found, and the difficult question arises of how to strike the balance. A quart of cherries cannot offset the same measure of injurious insects. "When a bird eats fruit the injury done stops right there; there are no accumulating consequences, but when it destroys a noxious insect, it checks the increase of the species, it destroys not only the one actual insect, but an indefinably numerous host of potential ones." Prof. Forbes believes that this consideration settles the question, and that Robins are largely beneficial even in the month of June. In July there was, taking the insect food alone, 7½ per cent of beneficial insects, against 10½ per cent of injurious ones. "But a beneficial insect is far more beneficial than an injurious one is injurious." The amount of fruits eaten is large; a total of 77 per cent. "Even the most devoted friend of the Robin must admit that if these 14 were fair examples, the Robin is a nuisance in July." In August the bird makes a better record, and "a small margin of profit may be ascribed to his operations in this month."

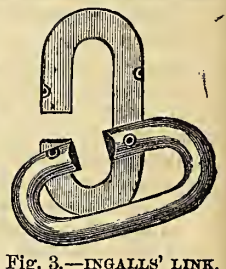


FIG. 3.—INGALLS' LINK.

FIG. 4.

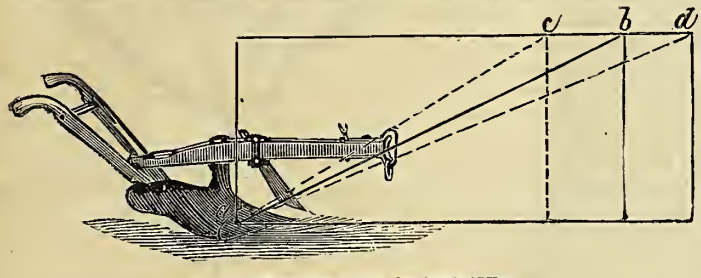
In conclusion Prof. Forbes writes: "These 41 Robins taken together had certainly done, just previous to the time of their demise, fully as much harm as good, as far as we can judge from the contents of their stomachs....Temporarily we may place the Robin in the list of moderately useful birds, using every opportunity to increase our knowledge, and for the time being leaving him practically to himself."

Stone-Boats.—At no time in the year, are stone-boats so much in request as at this season, when there are so many heavy things to carry to and from the barn and field. The harrows, plows, bags or barrels of grain, and fertilizers, with other things that are often taken across plowed ground, are best conveyed on a stone-boat. Every farmer should have one or more of these low and handy vehicles, which costs but a trifle for lumber and bolts, and can be made in the shop on a rainy day. All things

considered, the kind made from two-inch plank, sawed with an upturned end, is as good as any. When the boat is not in use, it should he placed on two timhers, or tipped on edge, so that the bottom may not rest on the earth, and thus be kept from the wet, and preserved from otherwise rapid decay.

The Line of Draught in Plowing.

One of the first essentials in good plowing is the adjustment of the clevis in the Line of Draught.



PLOW SHOWING LINE OF DRAUGHT.

No matter how perfect the implement may be in its construction and adaptation to the work required of it, if this adjustment is not properly made, it will not run on the sole and the furrow-slice will he irregular in form and imperfectly turned. Experienced plowmen, after repeated trials, will adjust the clevis to make the plow run level almost intuitively, without knowing anything of the principle involved in the changes in its position he finds it necessary to make. A knowledge of the various conditions that change the line of draught, and of the adjustments required in each case to make the plow run free, without a tendency to go too deep or too shallow, will, however, he of great assistance to those who wish to do the hest work. The reasons for the adjustments required to make the plow run the proper depth will he readily seen from a close study of the accompanying engraving. The Center of Resistance in drawing the plow is a point (*a*) just above the sole. This point will, of course, vary slightly in position, heing lower when the plow cuts a shallow furrow, and higher when the furrow is deeper. The line of draught is a line from the center of resistance, *a*, to the point, *b*, in the diagram, where the traces are attached to the collar. Now, to secure the free movement of the plow at a uniform depth, the clevis must he attached to the whiffletrees somewhere in this line, *a–b*. If the plow-heam is long, the end will he raised higher to cut this line—if the plow-heam is short, it must be lower for the same reason. If the traces are so lengthened that the team is farther from the plow, the weight of the collar remains the same, and the line of draught will then hc represented by *a–d*, which cuts the clevis at a lower point, and a corresponding adjnstment must hc made to make the plow run as hefore. If the traces are shortened, the line of draught hecomes *a–c*, the whiffletrees must he raised to the upper part of the clevis to keep the plow running at the same depth as in the other cases. When a smaller team is used, the point where the traces are fastened to the collar will he lower, and the effect upon the line of draught will he the same as that ohserved where the traces were made longer with the larger team. Every plowman knows that to hitch the whiffletrees to the upper notch of the clevis will make the plow run deeper, and to hitch in the lower notch will make the plow run shallow—and that to lengthen or shorten thc traces will have the same effect. In each case, however, the adjustment consists in hringing the point of attachment in the clevis into the line of draught, which changes as the depth of the furrow varies, the attachment of the traces at the collar remaining the same.

Cotton-Seed Meal is a very concentrated food, and in using it this fact must he kept in mind. A ton of it contains about 37½ pounds of Potash, 50 lbs. Phosphoric Acid, and 75 lbs. of Nitrogen. It is highly nitrogenons, as the analyses show, and therefore should he nsed with snbstances rich in starch, or like materials, which contain little or no nitrogen. Two pounds of cotton-seed meal, is enough to feed daily to a cow or a horse; smaller animals, should have proportionally less. Fed in the quantities given, there is no danger of its doing any injury, hut only good to the animal system.

Hints and Helps for Farmers.

A Self Fastening Bolt.—A simple and handy bolt is shown in figure 1, the important feature of which is the curved end. This end is so looped, that it will pass over the clasp *a*, when the loop is held upright. After the curved end of the holt has been shoved past the clasp *a*, thus bolting the door, the bolt turns down of its own weight, to the position shown in figure 2, in which position it cannot he pushed hack, hecause the lower part of the clasp *a* is longer than the upper. If it is desired to lock the door, this can he done hy having a hole in the lower part of the clasp, through which the stem of a common padlock can pass ahove the curved end of the closed bolt.

A Mending Clamp.—One of the handy things on a farm, is a clasp to hold firmly together the hroken

Fig. 1.—BOLT OPEN.

pieces of harness, halter, etc., while being mended, like that shown in figure 3. The clamp consists of two curved hickory strips, which are nailed to a

Fig. 2.—BOLT FASTENED AND LOCKED.

small square block hy one end, the opposite ends pressing upon each other with some force. The

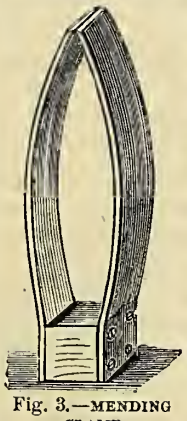


Fig. 3.—MENDING CLAMP.

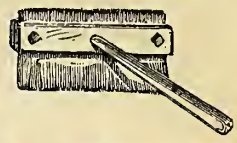
ends where they come in contact, should he so shaped that they will meet squarely, with as large a flat surface, as the thickness of the material will allow. When in use, the clamp is held hetween the knees, so that any additional pressure may he easily given. The implement is often made from portions of two harrel staves, which is much easier than to work out the hickory pieces, and for most purposes for which the farmer needs a clamp, made in this way will answer ahout as well.

A Litter Basket.—There are many occasions upon the farm where an ordinary hasket is far too small for the hest service. The one shown in the engraving helow (fig. 4), is designed to meet such cases, hut the writer has specially in mind the use of it in carrying green fodder from the field to the

Fig. 4.—A HANDY LITTER BASKET.

stahle, where it is to be fed, provided the distance is not very great. The Basket consists of a large open, hoop-pole hox resemhling a crockery crate—hut not so heavy, with two hars, fastened upon the sides to serve as handles by which it may be carried hy two persons. Such a hasket can be used for gathering various kinds of roots, cahhages, etc., and, in fact, very many things upon the farm.

A Cow Curry Comb.—"R. E.," Snyder Co., Pa., seuds a sketch of a curry comh and hrush for use in the cow stables. It is made of hroom-corn, for the hrush part, and two pieces of wood 6 or 7 inches long for the "head" fastened together by two holts, with the broom corn hetween them, as is shown in figure 5. A handle of any desired length is fastened to the middle of the hrush. Mr. E. likes it better than any other curry comh that he ever used with his cattle.



5.—A COW CURRY COMB.

Another Wagon Jack.—No douht that so long as wagons run, they will need to he oiled or greased, and to do this, jacks will he used. A suhscriher adds still another to our collection, in sending a sketch of one he has used for a long time, and which he thinks superior to many he has seen. The engraving, figure 6, gives the method of construction of this jack, and it needs hut little explanation. The hase is large, which is an important point in an implement of this kind. A single upright piece, a lever with a few notches, and an iron key, with a couple of bolts to secure them to the standard, are the materials required to make the jack. The method of operation is simple, the dotted lines showing the different positions of the lever.

Sheep Washing.

It is a question in the minds of many wool-growers as to the practical utility of washing the fleece while it is still upon the sheep's hack. A deduction—usually one-third—is made hy the wool-huyers from the weight of all unwashed wool, and in most cases this is not far from the loss which the fleece would sustain in the process of washing, if it is done with the average amount of thoronghness. Nevertheless, the practice of washing the sheep is

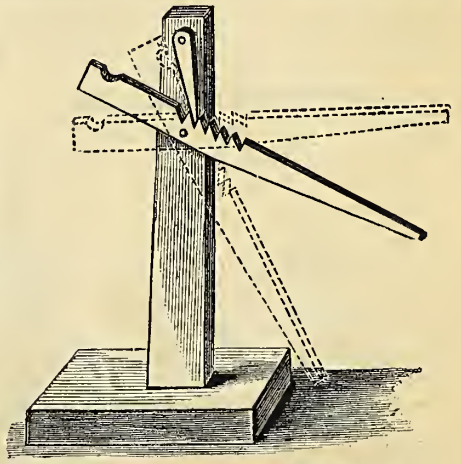


Fig. 6.—A JACK FOR LIGHT WAGONS.

very general, and if there is no return in money for the lahor of washing, there is the satisfaction of having cleaner wool to work with when shearing.

The common method of washing is to select some favorable place in a hrook where the water is abont 3 feet deep, the hottom hard and gravelly, and the current moderate, and then huild a pen of rails sufficient to hold a large flock, and provided with a narrow opening towards the stream. Into this pen the sheep are driven through an opening, temporarily made for the purpose, at the rear. One man, perhaps aided hy a hoy, tends the flock and passes the sheep to the washers who are standing in the stream. The sheep should have heen previously tagged aud freed from all large soiled clots. The washing should not he done until the water has become so warm that the sheep may not be chilled and injured. Special care must he taken with old or sickly sheep, and ewes that are still with lamh. An exposure of the sheep to a warm rain

the day previous to the washing is an advantage, as it softens and loosens the dirt and renders the washing easier and more thorough. As the sheep are washed they should pass out upon a clean, grassy slope that rises gradually from the stream, otherwise the water-laden animals may fall and soil their fleeces. After washing, if the weather should suddenly turn cooler, the flock should be provided with shelter, to prevent their taking cold, as they would be very likely to do. From the time of washing to that of shearing, two weeks or so, the sheep should be kept in a pasture that is free from any bare ground, overhanging banks, or steep side-hills, so that the wool may be kept clean.

A second method of washing, which is employed when the stream is small but somewhat rapid, is to arrange a spout for the passage of the water, and hold the sheep under the end—the water flowing upon the animal. In this way the washer does not go into the stream, and if provided with rubber boots and apron, may keep himself comparatively dry. The washing by this method is very thorough as there is a stream of clean water constantly flowing into and through the wool, and carrying off the impurities as they are removed from the sheep.

Bogus Bermuda Grass.

Serious "Official" Blundering.

A friend in Marshall, Texas, wrote a while ago, that the same mail which brought him the February *American Agriculturist*, containing an article which stated that Bermuda Grass was not known to produce seed in this country, also brought him a package of "Bermuda Grass *Seed*," from the Department of Agriculture at Washington! Naturally he was in a quandary, and inclosing a sample, said; "Please tell me if this is *the* seed, if so, is it probably brought from some other country?" We opened the parcel;—with all our faith in the capacity of that Departmeut for blundering, we could hardly believe it. It did not seem possible that any one not entirely daft, could have sent *this* for Bermuda Grass. We wrote to our Texan friend for the label sent with the seed, and in response to this request he sent not only the label, but the parcel as it was received. There could be no mistake about it—at least not on his part. The label reads thus:

"Department of Agriculture.

BERMUDA GRASS.

☞Note and report, soil, culture, time of ripening, quality, and quantity of crop. This is required of all persons receiving seeds, as a condition of the distribution."

The bag contained about a quart of broken spikelets, a whole one of which, of the natural size, is shown in figure 1. This grass, though well known to botanists, is so little known to people in general, as to have recieved no common name—at least, none is given in the works on southern botany, nor have the southern friends of whom we have inquired, been able to learn of one. We are therefore confined to its botanical name, which may be called an *un*common one, so far as length is considered — *Stenotaphrum Americanum*. Generally when we know the derivation of such a name, its meaning helps us to remember it, but in this case it does little good to know that *Stenos* means "narrow," and *Taphros* means a "groove," when the "narrow groove" is upon a part of the flower quite hidden from sight, and so small that only a glass will show it. As to the specific name, *Americanum*, that can hardly be regarded as descriptive. We do not take sufficient space to figure the whole plant, as the flowering portion is the characteristic part of it. It has extensively creeping stems, from which arise flowering stems about a foot high, bearing one to four such spikes as that in figure 1. The structure of the spike is quite unlike what we are accustomed to see in grasses; that portion which holds the flowers (and seeds), is thick and flattened, and the flowers are hidden in little depressions, or excavations in its substance—a structure so unusual, that it would arrest the attention of any observing person. Compare this figure with that of the spikes of Bermuda Grass in figure 2, both being of real size. Can any two grasses be more unlike? Yet the Department of Agriculture of the United States, seuds this over the country as Bermuda Grass! When Newton was at the head of the Department, a friend of ours was in the office on some business, and saw a box, labeled "*Echium vulgare*," and on asking what that meant, he was informed that it was "the seeds of a new honey plant just imported from Europe," which was about to be distributed for trial as bee pasturage. Our friend, thinking that there was already quite too much "Viper's Bugloss," or "Blue Devils" in the country, made such a vigorous protest, and brought such strong evidence upon the point, that the country was saved this scattering broadcast one of the worst weeds known to our agriculture. It appears that the Government Seed Shop has not improved in all these years. Let us say here, that the sending out of this stuff for "Bermuda Grass," could not have happened had the Botanist of the Department been consulted—and the very fact that it is done, shows that he was not consulted—for he, being a man of science, would have protested against it. But what is the *Stenotaphrum* really? Not being Bermuda Grass, what is it good for? will be asked. This is a point upon which we have not been able to get any direct information. Doct. Porcher, in his excellent work on "The Resources of Southern Fields and Forests," does not mention this species of grass, which is in itself strong negative evidence, for scarcely any vegetable product of even doubtful utility, has escaped this industrious author. Chapman says nothing as to its uses, and Elliott, (1821), whose descriptions are much more in detail, and who rarely fails to notice the popular reputation a plant may have, if useful or otherwise, says nothing of this, nor do recent inquiries add to our knowledge. The plant is described as growing near salt water, from South Carolina to Florida. If a grass found within the influence of salt water, should be found of any value in cultivation, it would be something remarkable. But that is not the question, and does not affect the fact that the Government Seed Shop is conducted with a lack of accuracy, a wicked, blundering stupidity, that would ruin any one legitimately engaged in the seed business. A salt-water grass, not its seeds proper, but its seed clusters, of no known utility, is sent over the country at public expense by the Government mails, with the Government label, under a false name, pretending to be the seeds of a grass, which, under certain conditions, and with proper management, has real value, but which has never yet, so far as our most experienced botanists have learned, produced seeds at all in this country. This Government distribution of seeds is a sham and a farce. Sustained under the plea that it introduces new and rare varieties, it really supplies squash, tomato, and other common garden seeds, that the many have to buy, to the friends of a few Congressmen. When it undertakes to give out a novelty, it is quite apt to send seed of a tropical plant, with no explanation, to Northern Minnesota, or make some other blunder. But this Bogus Bermuda Grass Seed, is the most glaring example of the utter ignorance, of the entire lack of appreciation of the importance of accuracy, that has come to our knowledge. It is time, if this seed business is to be continued, that it cease to be carried on to the detriment of the farmers of the country. How many, who having read of the value in some localities of Bermuda Grass, will plow, harrow, sow, and watch and wait, and if they get any return, will have only what is likely to be a useless salt-marsh grass—at any rate not Bermuda Grass. Thus an error goes out with Government sanction, which will not be rectified in years. Instead of striving for a seat in the Cabinet, or giving banquets marked by the conspicuous absence of nearly all of the bidden guests, the head seedsman had better get some one in his shop who knows Bermuda Grass, that its botanical name is not *Stenotaphrum Americanum*.

Fig. 1.—"BERMUDA GRASS" (*Stenotaphrum Americanum*) OF THE U. S. DEPARTMENT OF AGRICULTURE.

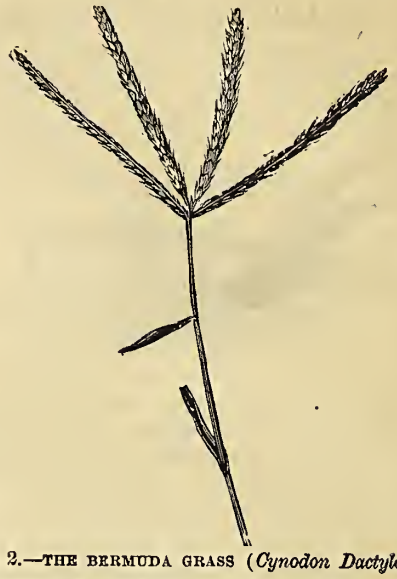
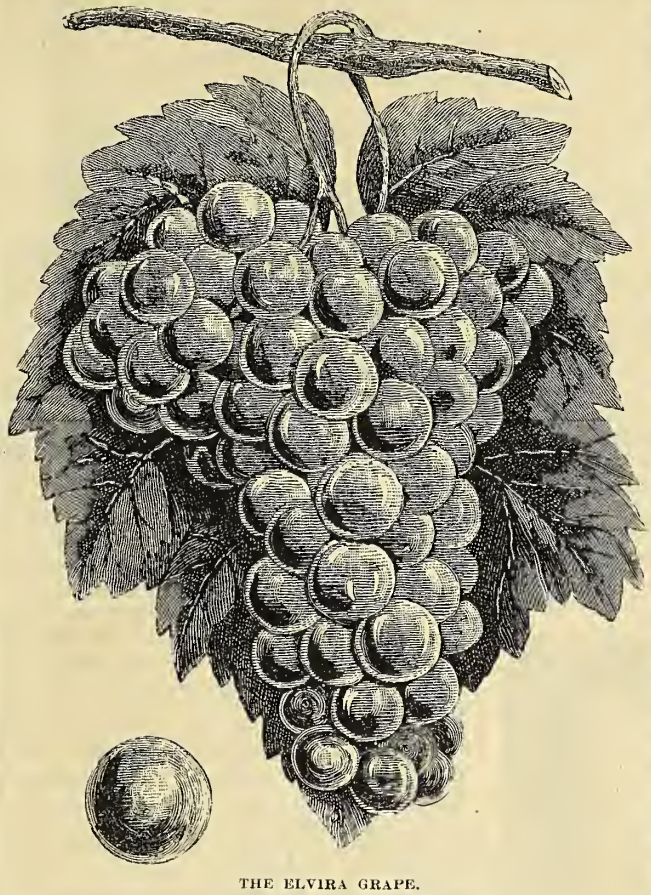


Fig. 2.—THE BERMUDA GRASS (*Cynodon Dactylon*).

Some of the Newer Grapes.

It is interesting to look back 12 or 15 years in our volumes, and see how largely they were occupied by articles on grapes and grape-culture. There seemed at one time danger of a second "multicaulis mania," so generally did grape-culture occupy public attention. The sudden cessation of this interest is one of the most curious incidents in the history of our fruit culture. The inroads of the Phylloxera, though unrecognized, had much to do with the collapse, but not all. Our people in this, as in many other things, had a "zeal beyond knowledge," and that cooling off, which in such cases is sure to come, took place in this instance with a most surprising suddenness. Though grape-culture has, since that time, been remarkably quiet, it must not, on that account, be inferred that nothing has been done. In fact, there has probably been more real progress in these last 12 years than in all previous time. Formerly it was thought that progress consisted in producing new varieties of grapes, and the great point was to get *the* grape. We already had the "grape for the million," but our leading grape-men strove to find one grape for "all the millions." As we look back upon it how droll it all seems. There were several who claimed to have *the* grape, and how perfect (in its producers eyes at least), that grape was! To ask a question implying that the grape had a fault, was as great an offence as to speak disparagingly of the owner's wife. The grape-safety of the nation was to hang upon *the* grape, and it is astonishing how many of them there were. Where are they all now? We have learned much since those exciting times. When we learned that there was not, and in the nature of things could not be, *one* grape for the whole nation, a long step was made forward. When that point was admitted, the occupation of those who had *the* grape was gone. The Phylloxera was a dreadful scourge, but it taught a most important lesson, that there were grapes—and grapes. Grape-growers will not

recognized the fact that while Nature had given us several very distinct species of wild grape, they had been working, with remarkably few exceptions, upon the varieties of one species and hybrids from them. The Isabella and Catawba, the Iona and Walter, the Concord and Ives, and a long list of others that have had their season of popularity, were all derived from one and the same wild species, and consequently partook, more or less, of the peculiarities of that, whether those were desirable or otherwise. The general recognition of the fact, and working upon the knowledge that there were, at least, three other species of native grapes, the varieties of which might be valuable, was the next forward step in grape-culture. The varieties we have referred to are derived from the common Fox Grape of the Atlantic slope—the *Vitis Labrusca* of botanists. Besides this there are *Vitis æstivalis*, the Summer Grape, *Vitis cordifolia* (sometimes called *riparia*, for reasons we need not give here,) the Frost Grape, and *V. vulpina*, the Southern Fox, or Bullace. This last is restricted to the far Southern States and need not be considered, but the other two species have proved mines of horticultural wealth, which have amply repaid the thorough working they have received in the past few years. We would not be understood to say that varieties of these species were not previously known in cultivation, as every one familiar with grapes knows better; but, that it is only recently that an earnest effort has been made to seek out new varieties of these, and to improve them by the production of new seedlings. We have turned out of the old ruts and are running in new tracks. Not only do the species mentioned differ in their fruit, but they are unlike all through, even to the texture of the wood and the ease with which they may be propagated from cuttings. As stated in another article, the grape-louse—Phylloxera—is not destructive to all grapes alike, there being certain varieties that are so little affected by the scourge that they are practically Phylloxera-proof. Upon this fact, it is not too much to say, rests the future of grape-culture in this country, and the search for varieties which, while they resist the Phylloxera, shall be equal to the older kinds in the quality of their fruit, has led to the great recent improvements in grape-culture to which we have referred. We had varieties before of which the fruit was good enough, well nigh perfect, but we couldn't get it, no matter how many vines we had; there was "mildew of the leaf," there was "rot of the berry," and there was "the vine didn't do well with me"—another name for Phylloxera, that stood between us and the fruit we knew to be so excellent. It is largely due to the devoted grape-growers of Missouri, and to Mr. Ricketts, of Newburgh, N. Y., who has been at work in the same direction, that we now have several, with the promise in the near future of several more, varieties of grapes, the fruit of which is of excellent quality—and, what is more to the purpose, the vines are thus far, without the drawbacks that have made grape-growing too often little else than a series of disappointments. While we anticipate gratifying results from the introduction of new varieties derived from the *æstivalis* and *cordifolia* species, the former being especially suited to the Southern States, we would not forget that great improvement has been made in those derived from *Labrusca*. Because other classes of grapes are coming to the front, it will be a long time before these will go to the rear, especially as table grapes. In this class we find some of our very best and our very worst as to quality, and there is no uniformity as regards their ability to resist mildew, Phylloxera, etc. Among the newer varieties especially noticeable are Brighton, Highland, Jefferson, Moore's Early, and Storm King among dark grapes, while in whites we have Duchess, Pocklington, Niagara, Lady Washington, and Prentiss. Among new



THE ELVIRA GRAPE.

grapes should be included the wonderful collection raised by Mr. Ricketts, a few of which have been offered, but many choice treasures are yet in reserve. Indeed, so many have been the additions to the list of grapes that a new work on grape-culture was needed, if only to record and describe these, as they have all appeared since any of the standard books were published. Prof. George Husmann, of the State University of Missouri, has given us such a work,* and all who know anything of grapes and grape-culture will concede his ability to do so. This work, while it gives the author's methods of growing and training the vine, which are generally followed in Missouri, and shows how to convert the fruit into wine, is especially valuable for the information it gives on the newer grapes of all classes. We give two engravings from the book, showing two of the newer varieties, one of a peculiarly western type, the Elvira, and the other, the Prentiss, one of the recent eastern additions to the grape list.

THE ELVIRA belongs to the class of grapes derived from the species *cordifolia*, and is very interesting, as showing that a faulty, almost worthless variety, may produce a seedling of great excellence. It was raised by Jacob Rommell, of Mo., and is a seedling of the Taylor. The parent is chiefly noticeable for a wonderful extent of vine, and a corresponding scarcity of fruit. The fruit is well enough, but the berries are but few in a cluster and small. The Elvira—well, to hear our Missouri friends talk, brings back the days when the originators of the Iona, the Walter, set forth their merits, with this difference however: those grapes had no faults, while the Missouri people admit that the Elvira has just one; The bunch is so compact, that sometimes a rain coming after a drouth, causes the berries to crack. It is a white grape of medium size and great beauty, and of excellent quality for both table and wine; perfect hardiness, entire freedom from disease, great productiveness, and ease of propagation, are claimed for it. The shape of the bunch is given by the engraving, with which is a separate berry, to show the actual size.

THE PRENTISS was raised by a gentleman of that name, in Western New York, and is from the Isabella. If bad qualities were always transmitted, this should have its share, but, on the contrary, the vine appears to be exceedingly healthy. This is also a white grape, of medium size in bunch and berry, of good quality, and a toughness of skin, that makes it a most excellent market fruit. Its productiveness is shown in the engraving, and is something wonderful. As we saw and handled the vine from which the photograph was taken, we know that no bunches were tied on for effect; indeed, when we say that it was exhibited by Mr. T. S. Hubbard, of Fredonia, N. Y., the assurance is unnecessary. It was wonderful as a specimen of fruitfulness; but no vine should bear so much.

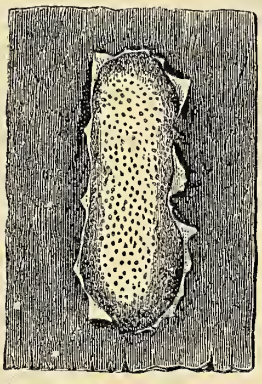
A NEW WHITE GRAPE—PRENTISS.

*American Grape-Growing and Wine-Making, by Prof. George Husmann. New York: The Orange Judd Company, 245 Broadway. Price, sent by mail, prepaid, $1.50.

The White Moulds on Plants.

A number of our cultivated and other plants are often attacked by members of a small group of Fungi, which, from the prevailing color of the blotches and spots they produce, are commonly spoken of as the *White* Moulds. The mustards are especially subject to these moulds, their stems (a portion of one is shown in fig. 1) frequently being almost entirely covered with the white spots, which have been likened to streaks of whitewash, and not without good reason. The Cabbage, Cauliflower, Shepherds' Purse, and a number of other plants belonging to the Mustard Family, are subject to these pests. One species of the White Moulds is common on the Salsify, or "Oyster Plant," and in some localities "it is so abundant as to excite fears that the crop might be destroyed." Figure 2 shows an enlarged view of one of the spots of figure 1. It is seen that the epidermis, or skin of the mustard stem, is ruptured and forced back by a mass of white-colored substance, which arises from the interior. This substance consists of a vast multitude of spores which are white and closely packed together. A cross-section of one of these small spots from a leaf, is shown in figure 3, from which a clear idea of the nature of the mould may be gained. The skin of the leaf is shown as ruptured and turned back—the substance of the leaf below is seen to consist of oval cells which are shaded or *dotted;* those at the lower portion being regular in their arrangement by the side of each other. The fungus itself consists of minute threads, which may be seen passing between the leaf-cells and ending at the point of rupture, in rows of nearly spherical bodies, which extend upwards and are exposed to the open air. Two of the rows of spores are shown still more highly magnified at the right of figure 3, with the attachment to the thread at the base; some new rows of spores are beginning to be formed. The slender threads which pass through the substance of the mustard, or cabbage plant, act as roots for the purpose of taking up nourishment, and it is only after these threads, or filaments, become numerous and well established, that the fungus turns its attention to the production of spores. In this respect fungi are like all other plants, first they accumulate a stock of nourishment and then devote it, or a large portion, to the propagation of the kind. The white spores, which are formed in such large quantities, are for the rapid increase of the mould; and they are carried by wind, rain, etc., to some new place on the same or another plant, where they germinate and grow, and produce a new spot in the course of a few days, thus spreading the disease with great rapidity. Besides the spores just described, which we have seen are produced in rows upon protruding filaments, and are for immediate growth, there is another kind which is formed by a slow process by the union of filaments down in the substance of the plant upon which the fungus is growing. This second kind of spore is much larger, provided with a thick, firm coat of a dark color, which is variously marked upon the surface. A considerable portion of the growing season is required for the perfection of spores of this kind, and they can be found in autumn always within the substance of the plants. They do not germinate at once, but remain dormant through the winter, and grow the following spring. The germination of these *winter* spores, as they may be called, is peculiar. The contents divide up into a large number, sometimes as many as a hundred, small bodies, each of which then grows and produces a separate plant. Figure 5 shows one of these winter spores, also one producing a multitude of small bodies, each of which is provided with two minute hair-like threads, and capable of motion. One of these little bodies—motile spore—is shown greatly magnified near the center of the engraving.

Fig. 1.



2.—WHITE SPOT MAGNIFIED.

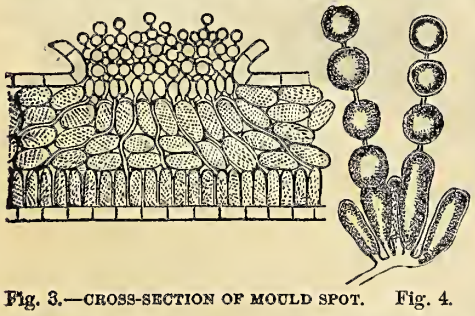


Fig. 3.—CROSS-SECTION OF MOULD SPOT. Fig. 4.

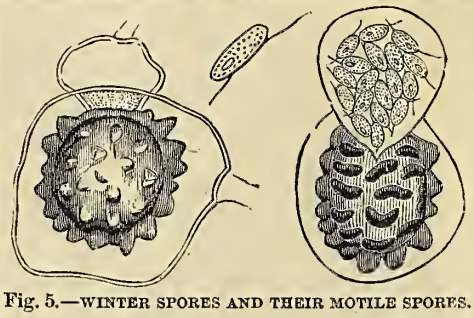


Fig. 5.—WINTER SPORES AND THEIR MOTILE SPORES.

Up to the present time the injurious effects which have resulted from the White Moulds have been small as compared with those from many other fungi. From the general similarity of the members of the group in hand to the Grape Mildew, the treatment should be the same, namely: the use of Flowers of Sulphur, dusting it freely upon the plants so soon as there are any signs of disease.

A word can be said in favor of the White Moulds, in that one species is very fond of the common Purslain or "Pussley," and often attacks it so vigorously as to endanger its life. For this no one will complain. Another member is a lover of the "pig weeds," and helps to keep them in check. If we could induce all fungi to grow only upon our weeds it would be a strong point gained.

The Great Enemy to Grape Culture—Phylloxera.

Since the first discoveries concerning *Phylloxera*, we have through one cause and another said but little about it. Indeed, since we had an article on the subject a vast number have taken up grape-growing, multitudes of new readers have come to our pages, and it seems necessary to give a brief account of it. *Phylloxera* is a plant-louse, the name, which stands for a genus of these insects, is derived from Greek words, meaning *a leaf*, and *parched*, from the scorched appearance that oak-leaves assumed from the attacks of another and an earlier known species. The full name of the one in question, that which preys upon the grape, is *Phylloxera vastatrix*. It is an American insect, and was a cause of serious losses to our grape-growers long before its existence was known or even suspected, and passing to Europe completely devastated the vineyards of some localities, and where wine-making is an important industry, caused losses only to be estimated by millions of dollars. Those familiar with grape-vines must have noticed—especially upon the Clinton—leaves studded with small warty looking galls, as in fig. 1, which sometimes present a very pretty appearance. Some seasons these are very abundant, and again rare; these, if cut open and examined with a magnifier, will be found to contain an orange-colored insect and her eggs. Figure 2 represents one of these galls thus divided, the cross line giving the real size. This is one form or type of the insect, which lives only upon the leaves, and does comparatively little damage. Another type of the insect inhabits only the root of the grape-vine, and as this is the most important from the injury it is capable of inflicting, we will not notice the other any further at present, beyond saying that it is called the Grape-Gall-Louse or *gallicola*-form of *Phylloxera*. A vine is observed to make a poor growth, the next year the growth is still less vigorous, the leaves turn yellow, and that year or next the vine dies outright. If the vine be dug up, it will be found to have no fibrous roots, and after its death it is very likely that no cause of the trouble can be found. If, when the symptoms of failing first appear, the vine be dug up and its roots examined, they will be found to present the appearance shown in figure 3, and a magnifier will allow the cause of the trouble to be plainly seen. In figure 3, a small fibrous root, one of the rootlets, by which the plant feeds, is shown at *a*. Upon the portions of the larger roots, marked *d, d, d*, great multitudes of minute root-lice will be found, and elsewhere on the root-fibres; these when young and tender are punctured by the insects which suck away at their juices, the results of their injuries being seen in the swellings and knots formed upon the root-fibres, as shown at *b*. After they have exhausted one, they go to others, and this rootlet soon begins to decay, as shown at *c*, and before long the whole root-system of the vine is completely destroyed, and the vine of course dies. This being the form of the injury, let us briefly describe the insect which causes it. Like many related insects, the *Phylloxera* has its winged and its wingless forms, and its females are capable of reproduction for several generations without the presence of males. The insect passes the winter in the dormant state upon the roots of the vine, as larva, which is much like the root in color; when the growth of the vine starts in spring, these rapidly reach the mature wingless state, and commence laying eggs. In figure 4 is given *a*, the back, and *b*, the side view of these wingless females, magnified, the real size being shown at the left hand of *b*. These eggs hatch and produce other egg-laying females, and five or six generations of them follow on, the insect thus multiplying rapidly and preying upon the growing root-fibres. About midsummer, some females with wings are produced, and these make their way to the surface, and fly away to found new colonies, and this continues, the production of winged females, until the growth of the vine ceases in the fall. A view of a winged female is shown at figure 5, of course greatly magnified. These winged females carry the trouble from vineyard to vineyard, and it is believed the wingless ones make their way over the surface and through crevices from vine to vine. There is much that is interesting in the history of the insect, such as the production of both sexes after several generations, which start the race anew for several continuous generations of egg-laying females, and that the root-lice may produce the gall-lice upon the leaves, but we can not occupy space with these. The point with the grape-grower is, to know the disease; what causes it, and the remedy. Here, of remedy proper, there is none. Various applications have been suggested, but they are impracticable. The root-louse attacks all forms of the European vine (*Vitis vinifera*), and is sadly destructive to it, the climate in many European wine countries being especially favorable to the development of the insect. The

Fig. 1.—THE LEAF GALLS.

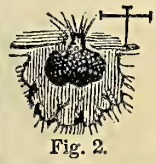


Fig. 2.

capital discovery has been made that all varieties of American grapes are not equally injured by Phylloxera, and that while it is almost impossible to cultivate some, on this account, there are others that may be regarded as *Phylloxera-proof*. This dis-

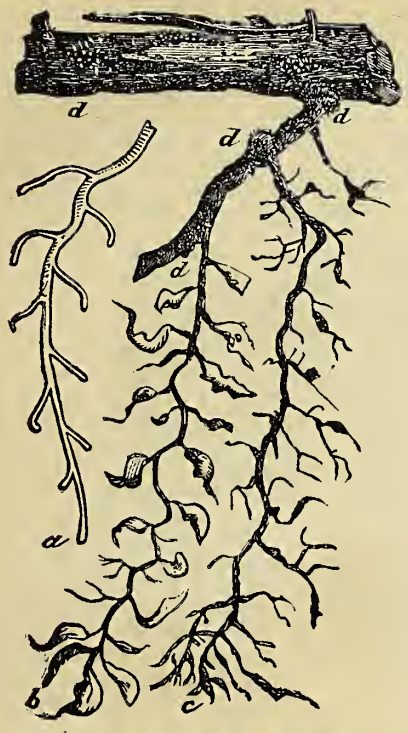


Fig. 3.—ROOTS OF THE GRAPE.

covery and its practical application, in the production of varieties that produce good fruit above ground, and can in their roots resist the destructive little louse, have given new life to grape-culture in this country. Already several varieties are now known that do both, and still others are soon

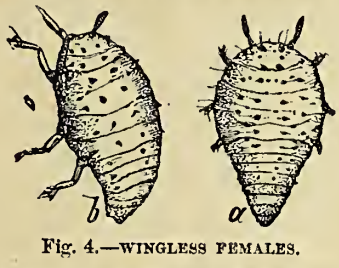


Fig. 4.—WINGLESS FEMALES.

to be expected. Not only has the influence of this discovery revived the hopes of our vineyardists, but it is likely to prove the salvation of grape-culture in Europe. Thousands, if not millions, of our Phylloxera-proof vines and cuttings have gone abroad to be used as stocks in their vineyards, upon which, by grafting, to establish their grapes on invulnerable roots; and as *Phylloxera* has already appeared in California, where the European grape is so largely cultivated, the vineyardists there must soon adopt the same measure of safety. Thus America, which sent the insect which at one time threatened to make barren the vineyards of Europe, has afforded the only practical relief. The engravings here given are from the Missouri Reports of Prof. C. V. Riley, whose labors in relation to this injurious insect alone would accord to him the highest rank as a scientific and practical entomologist.

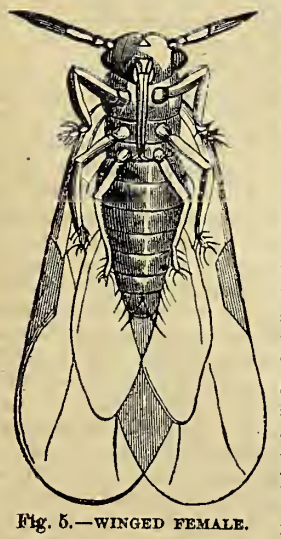
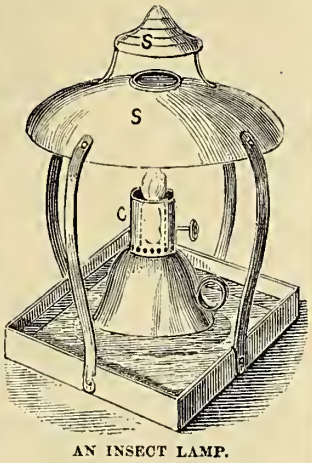


Fig. 5.—WINGED FEMALE.

Another Orchard Lamp.

In March last we gave in an account of the North Texas Pomological Society a description of a lamp adopted by the Society, to be used in trapping night-flying insects. After that paper had gone to press, we received from the Secretary, T. V. Munson, Esq., a letter, stating that he had been experimenting with the different lamps that had been presented to the Society, with a view of learning which was the most economical of oil, and would best hold its flame in the wind. He sends a drawing of one which he finds preferable to the lamp figured in March, and which he had selected as probably the best without having tested it. The apparatus here given has a common brass hand-lamp, with a slotted burner; it has no chimney, but is provided with a cylinder of brass (*c*) open at both ends, placed over the burner to shield it from side gusts; the cylinder is perforated around the lower margin, to allow of better ventilation and prevent heating. The lamp stands in a pan of water upon which a little oil floats. A stationary double shade (*s*) is attached to the pan. Mr. M. estimates the cost of the whole at $5 per dozen." This wholesale destruction of insects is a matter that needs careful observation and study, and in presenting one of the methods by which it is proposed to accomplish this, we by no means give it full approval. In catching insects the light attracts and the water drowns all night-fliers alike; many thus caught will no doubt be injurious, others will be, so far as known, without any direct relation to our fruit and other crops, while others still may be positively beneficial as destroyers of other and harmful insects. It becomes a problem whether the capture of beneficial insects is not a greater injury than the taking of the noxious ones is productive of good. Experiments are needed before this matter can be decided, and it is likely that the results will be very unlike in different localities and in different seasons. We hope that the wide-awake Texan pomologists will aid in settling this question.



AN INSECT LAMP.

An Asparagus Bed.

If any farmer were to read the directions given in the older works for making an Asparagus bed, he would at once conclude that Asparagus was a luxury not for him. A pit was to be dug, and oyster shells or brick-bats put in for a foundation; then nnmerous loads of manure were to be buried by trenching, and so much circumstance attended it that ordinary persons were frightened at the labor and expense. But of late years our garden-books do not copy English methods, and in nothing is the change for the better seen more distinctly than in Asparagus culture. Any one who can set out tomatoes can plant an Asparagus bed. The first thing is, to get the plants; good strong plants a year old may be had of most seedsmen. If one prefers, he can raise the plants; the seed is to be sown in a rich bed just as beet seed is sown; make rows 15 inches apart and an inch deep, distribnte the seed evenly, and cover; when the plants are well up, thin to three inches, and keep clear of weeds all the season; the plants may be set next fall or the following spring. Those who buy the plants will gain a year; they are usually advertised in our columns. For family use the distance of planting varies. Where there is a plenty of room, rows three feet apart, with the plants a foot distant in the row, is better than nearer. Choose good garden soil, and set the plants so that the crowns will be at least four inches below the general surface. At planting, give each root a spadeful of fine manure or compost, and trust to annual manurings to keep the plants in a productive condition, instead of the old method of manuring once for all future time. During the season keep the bed well cared for, the soil loose and free from weeds. As a general thing, the plants should grow two years before cutting. There are several new varieties now offered. Smalley's Defiance, Giant, and the Colossal are the most prominent ones.

A Ticket or Label Holder.

Those who exhibit fruit, wish visitors to know whose it is, and those who visit exhibitions wish to know whose and what the fruit is. Yet every one who has had much to do with exhibitions, is aware that after a dish is handsomely filled with specimens, there seems to be no place for the ticket. If put upon the fruit it hides a portion of it, and disfigures what would otherwise be a handsome object. If the card is laid upon the table it is very apt to be displaced either accidentally, or by those persons who use their fingers to aid their eyes. The necessity for some contrivance to attach the ticket to the plate and to the dish led to the invention of one several years ago by our friend, E. W. Buswell, Treasurer of the Massachusetts Horticultural Society. Now another contrivance for the same purpose comes to us from Mr. Peter Rudell, Grand Rapids, Mich., who, without any knowledge of the other, has contrived the device shown in the engravings. The affair is made of brass wire, which has considerable elasticity, and is bent in the shape shown in figure 1, by which it will be seen that the wire is all in one piece, and so bent as to afford at one end a clamp to clasp the edge of the dish, while the other holds the card or label, which is placed between the ring and the straight piece of wire shown as crossing the ring. If desired to hold the card still more securely, that end may be made sharp and bent at right angles to form a small point to penetrate the card. A card once put in place in this holder is secure against removal by any passing wind, and is held up where it is seen to the best advantage, by all who wish to be informed of that which the label is to represent. With a bit of wire of a size a trifle larger than the one shown in figure 1, one can, by following the engraving, soon learn the bends necessary to give it the proper form. Figure 2 shows the way in which the affair is used; it holds the label well away from the fruit, allowing both that and the fruit to be seen. Mr. R., by freely giving them this little invention, has placed exhibitors of fruit and managers of exhibitions under obligations to him. Now that the spring shows are at hand, those in charge of them should provide a supply of these useful and convenient affairs, as Strawberries are, of all fruits, the most easily disfigured by having large pasteboard labels laid upon them in the ordinary way.

Fig. 1.—SHOW-CARD HOLDER.

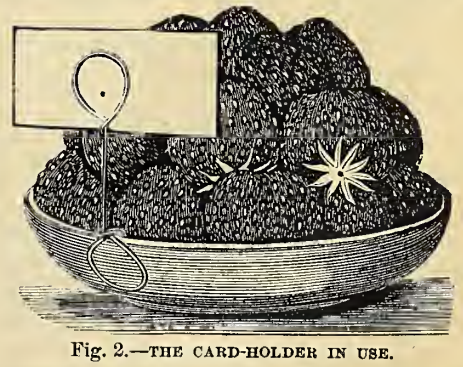


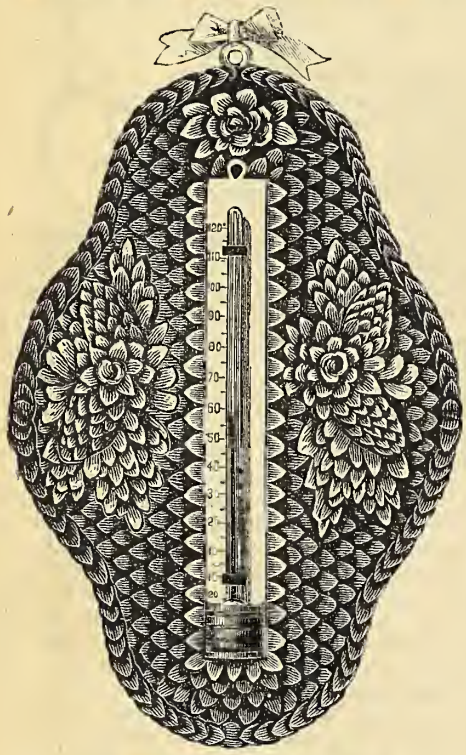
Fig. 2.—THE CARD-HOLDER IN USE.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

A Thermometer Frame.

Aside from the pleasure many persons seem to derive from the frequent consultation of a thermometer, apparently to ascertain whether they are hot or cold, it is of real use in giving an accurate knowledge of the heat of a room, and thus aid in keeping it of a proper and even temperature. Thermometers are now so cheap, and at the same time sufficiently accurate to serve as an index of temperature, as to be within the reach of all. We say "index," because it is a well-known fact that a person, of himself, is not able to judge of the heat or cold of a place with any great degree of accuracy. What is warm to one person may not be so to another—the sensation of heat and cold depending so much upon the temperament, personal health, previous exposure, etc. But we did not intend to discuss the uses of the thermometer so much as its surroundings. A plain thermometer—plain as to its scale and figures, and plain as to its mounting—is usually likely to be better than any fanciful one, and the best to buy. Many ladies with a taste for home decoration will contrive to



A NEAT THERMOMETER FRAME.

unite the useful with the beautiful, and provide some kind of a pleasing background against which to fasten the thermometer. The accompanying engraving suggests a form of frame which may be constructed of a variety of materials, and in a number of ways, allowing the taste to take a wide range. The frame here shown consists of a background of card board, upon which the scales of pine cones and acorns are tastefully arranged, and fastened securely by fine, stout thread. After all the parts are put in place, a coat of shellac varnish may be given which will greatly improve the appearance. The thermometer is secured in its position in the frame by means of fine wires which are made fast upon the back side of the frame. A thermometer thus framed is much less liable to be blown down by a sudden gust of wind or knocked from its fastening by accident, or through carelessness.

Learning to Sew.—To be handy with the needle, is one of the sterling accomplishments of every educated woman. To be able to take the "stich in time," is worth all the time and trouble that are required to learn the art. Like walking, reading, and the many other things which we come to do without special thought, the learning to sew is a slow process, and should be begun while the child is still quite young. The girl should not only have the use of the thread, needles, and patchwork, but be instructed how to take the stitches, turn the corners, and do the various things connected with needle-work. We are not excluding the boys in our remarks, because they need to learn to thread a needle, and do general sewing. Men are many times so situated, that they must depend upon themselves for their necessary sewing. Even if it is an age of sewing machines, it is best that all children should learn to use the simple, common old-fashioned kind, which can never be wholly superseded. The amusement and occupation that sewing furnishes little folks, afford sufficient reason why all mothers should see that their girls, and boys too, learn to sew—but the very practical use of the needle in after life, is the principal thing after all.

Home Topics.

BY FAITH ROCHESTER.

Some Things to Consider in Moving.

The 1st of May is general moving time in many towns and cities; and the residents in these, in seeking a new dwelling, find that there are many things which should be taken into account. If you have a family of little children, you must consider the moral influence of the neighborhood, and you will desire to shun the vicinity of liquor saloons or disorderly houses. You will hardly like to take your little ones into a neighborhood where the children are called a "hard set." Pure air is one great essential. Do not be satisfied with the general "lay of the land," but cast an eye on your near neighbor's back yard, after duly inspecting the one you propose to make your own. Is your well so situated that the water is likely to be pure? Is there a chance for keeping everything neat and clean about your own premises? Are there stables, pig-stys, or other probable nuisances on your neighbor's premises so situated that they are likely to poison the atmosphere daily breathed in your own house? A friend of mine secured a pleasant house, in a healthy situation, with a charming view of lake and city from the west windows. Not until he was settled in the new house did he observe that the low chimneys of a house close by obliged him to keep the pleasant west windows closed in order to avoid the smoke almost always blown from the west against his house. This annoyed him so that he gave up the house and sought another, for the view from his west window and the pleasant breeze from the lake were the chief attractions of the place. A lady of my acquaintance rented a small house for herself and children, and supposed it would be an easy matter to get settled in the new home. But she neglected to explore the cellar, which had no outside door, until she had cleaned and occupied the first and second stories. Then she found a task indeed, and an explanation of the sickening odor that hung about the place in spite of all previous cleaning. Several barrels of vegetables, mostly potatoes, had been frozen in the cellar during the previous hard winter, and had never been removed, though it was now mid-summer.

A house-keeper wants a house where the work may be done with least inconvenience. A business man wants a place convenient to his work. For the children there must be nearness to some good school. The mother wants a safe place for the little ones to play out of doors. The one who does the housework inquires anxiously if there is a good cistern or some plentiful supply of soft water.

Oiled Floors.

All who have tried them, so far as I have learned, cordially recommend oiled floors for kitchens, or other rooms where carpets are not used. These are preferred to painted floors, because the color does not wear away and leave bare places. Some use Burnt Umber with the oil, and so give a darker color to the wood. Others use oil alone. Boiled Linseed Oil is used, and it is applied hot, with a paint brush, a scrubbing brush, or even with a cloth. Rub it in well, and henceforth have no fear of grease spots on the floor. Farewell to all scrubbing hereafter. The oiled floor needs only washing (or mopping) with clear, warm water. Of course soap would only tend to undo the work you have done in oiling. The hot oil should be re-applied occasionally. It comes in well as a part of each years' house cleaning.

Rag Carpets.

My new one—new two years ago—is almost worn out now. And yet, though this one has not done very good service, I think more of rag carpets than I used to. It is not because they are especially fashionable, for I have seen only one rag carpet besides mine since I put it upon the floor. That other one, in the sitting-room of a near neighbor, has since given place to a cotton carpet of gay colors and pattern, costing half a dollar a yard. When I "run in" to see my neighbors, I usually sit with my feet upon an Ingrain or a Brussels carpet. It is very pleasant, and I admire the neat carpet and the flowering plants, and all the dainty trifles on shelves and brackets. But when I go home and find my "hit-or-miss" rag carpet strewn with the little girls' dolly work, and the little boys' whittlings, and the baby's crumbs and playthings, I am glad it is only a rag carpet, and that I am not obliged to worry about the injury which would daily happen to a nice carpet where five children spend a good part of their waking hours. Besides, I think it is more "*Eastlakey*" than the very gay carpets of some of my neighbors! Anyhow, it harmonizes better with my very plain sitting-room furniture than good Ingrain or Brussels carpeting would. I like nice things, and if ever Fortune gives them to me, I shall be thankful I hope, as I am now for babies and for the companionship of childhood, and for the experience of a mother. I believe I will make one more rag carpet, at least. I think it will be "hit-or-miss," instead of striped, and I think I will put it down as I did this, without sewing the breadths, but simply lapping them, one a few inches over the next, stretching each one well, and tacking them very little except at the ends. It is easy then to take up and shake or beat the carpet and put it down again, so that the worn places may be less exposed. It is easy to wash out the most soiled portions. I will have a stronger warp next time, and think I will have it in two colors, so that there will be stripes running lengthwise of the breadths. I will be particular in cutting and tearing the rags to have them so that they will be even-sized threads in the filling, for I have never liked to see the places in this old carpet where thick woollen rags have sometimes joined on to finer cotton strings, making the texture of the carpet uneven, and causing it to wear out more easily. The little girls must sew them neatly, so as not to give a bunchy look when woven. I think I will have the rags divided into three kinds for sewing,—a basket of dark rags, one of light, and one of gay colors. The first may include the black and dark-browns and grays. The second will contain the light nondescript grays, browns, and old calico stuff; the third, anything at all bright. The one who sews can go round and round with these three lots, and so make a tolerably even "hit-or-miss." I am not *sure* that this will pay, but I am sure that I know of no carpeting for 50 cts. a yard that will do so good service as a good rag carpet made in the above mentioned way.

Trading With Rag-Buying Peddlers.

If the "rag man" paid as well for old rags as formerly, or if our old clothing sold for near the price which the second-hand dealers charge for it when they sell it, it would not pay most of us to make rag carpets. I was so disgusted with my last sale to a rag-buying tin-peddler, that I have been less saving of old rags since. I turned off so many things—a large bag of rags, a long piece of old hemp carpet, a cracked iron tea-kettle, and a few other trifles—that I expected to get, at least, a dollar's worth of new tinware. I got only two pint basins! And I meant to mend that old tea-kettle, but the sudden hope that I might buy a new one with the old things I was selling, led me to part with it. I wanted to try a recipe for mending cracked ironware, which I had been saving for some time, and if it proved as efficacious as it promised, I was going to report the case for the benefit of the readers of my "Home Topics." When I told my good next neighbor of my sale, she

said I did no worse than she did. She sold an old pair of pantaloons to the peddler for twenty cents—not a large sum for them—and learned afterwards that a new seventy-five cent knife was in one of the pockets, and went of course with the garment.

Out-Door Games.—Lawn Tennis.

The desirability of exercise in the open air need not be argued; all sensible persons admit it at once, but when they come to the question of "ways and means," the manner of securing this exercise, there will be found great differences of opinion. Some over-practical persons will say, "my girls can get all the exercise they need in making the beds and sweeping the rooms," or that "my boys get exercise enough behind the plow during the day." Such persons fail to appreciate the difference between work and beneficial exercise; those very girls will be as wide awake for a turn at croquet or the boys for a game of ball as if they had been idle all day. Useful exercise, in the way of recreation, is something more than a mere mechanical movement of the muscles. Exercise as such, undertaken as a recreation, only brings its best results when it occupies both the mind and the body, and when the movements of the body are directed to the accomplishment of some end that the mind has planned. The best recreation is that which is directed to the overcoming of some obstacle, or to excelling some rival. Open air exercise to be most beneficial

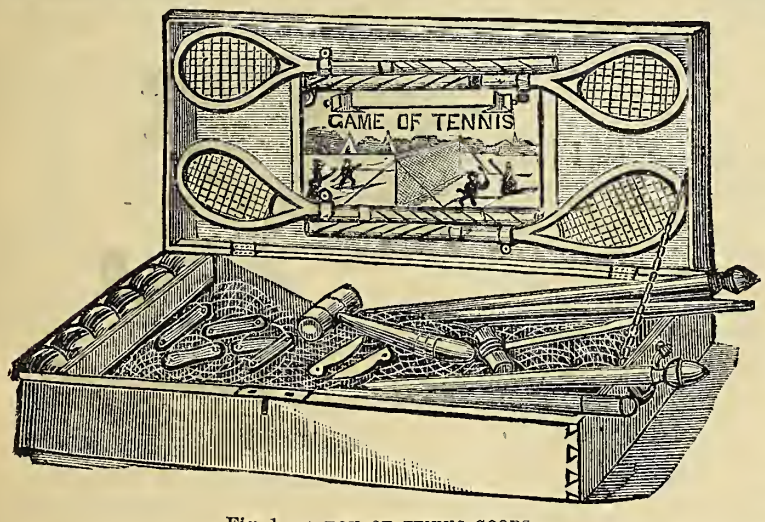


Fig. 1.—A BOX OF TENNIS GOODS.

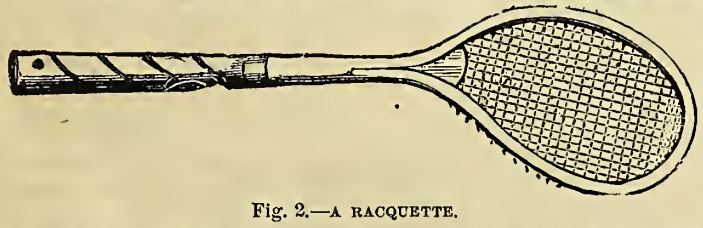


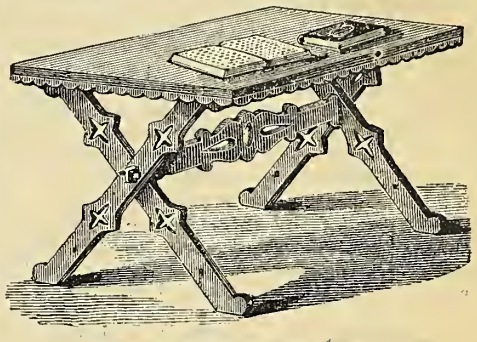
Fig. 2.—A RACQUETTE.

should be social, it ought to allow both sexes to participate, it should be competitive, and unlike any form of work. Croquet acquired its popularity, because it met all the requirements of an out-door recreation. The same may be said of Archery, though it has not become equally popular. But we naturally incline to variety, even in our amusements, and any out-door game to be popular must have all the essentials of croquet. It must be social, easily learned. There must be a demand for skill which calls for the exercise of both mind and body, it must include competition or rivalry, and the outfit and appliances must not be too expensive. Lawn Tennis is all these, and its popularity in England, though the game has been slow in crossing the Atlantic, is but the prelude to that which awaits it in this country. Tennis proper, is one of the games that have a history; it became popular in Europe in the 15th century, and is said to closely resemble, if it be not actually derived from, a game of the ancient Greeks and Romans. In historical works and in fiction in which the scene dates back a few centuries, we find mention of the "Tennis-Court," as the game required a space 112 by 40 feet, and surrounded by a wall 20 feet high on the sides and 30 feet at the ends. It was originally played by striking the ball with the band, which was protected by a strong glove. In the 15th century, the "racket" was introduced, a strong and peculiarly-shaped battledore for striking the ball instead of using the hand. This caused a change in the name of the game, which was formerly called *paume*, the ball being struck with the *palm* of the hand; but the player with the racket was cautioned by the cry of: *tenez* (pronounced *ten-nay*) which means "hold" or "hold hard," as it required a firm hand, and in time the word became adopted as the name of the game. But the game has been modernized and improved; it is now played upon the open lawn, which is not only vastly more cheerful, but brings the game within the reach of all who have a grass plot of moderate size. The space for the game is still called a court; it is marked out, usually 27 by 78 feet, though the dimensions vary. Across the middle is a net which is stretched between 2 posts; this is 4½ feet high at the posts and 3 feet in the center. The space each side of the net is divided into four parts, each having their names; the balls are about 2½ inches in diameter, of rubber, and variously covered. The Racquettes, or bats, are regarded as a most important part of the outfit, and good players are very particular in their choice of them. They look something like a highly civilized, long-heeled and rather one-sided snow-shoe, as, like that, they consist of a frame-work strung with cat-gut; some styles are of different colored woods and highly polished. These are the materials required for the game; as to the game itself we do not propose to describe it further than to say that, like all such games, there is an attempt of one side to do something with the ball, and it is the object of the other side to prevent its being done. It is of course governed by various laws in the observance and violation or neglect of which the gains or losses are made. The great strength the old game required of the player, in striking the ball with the band, gives place to skill and dexterity in the modern player, who finds the wielding of the racquette a healthful exercise, quite sufficient for the development of strength of body, and ease and grace of movement. Lawn Tennis bids fair to have a long career and not less popular than that of Croquet.

Household Notes and Queries.

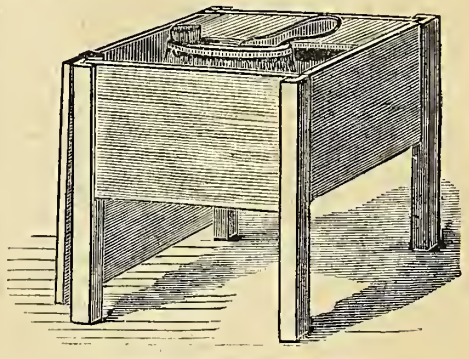
THE CLOTHES LINE.—By many persons the clothes line is looked upon as a general necessity but a very common nuisance—and in many cases the judgment is a just one. The clothes line is proverbially in the way, especially if an axe is to be used in splitting wood in the back yard. This ought not to be. The line should be taken down so soon as the clothes are removed. Of the many devices for doing this the oldest seems to be the best: the simple method of winding it over the elbow and hand, and securing the coil with the end of the rope. The various patent folding clothes bows have the advantage of closing up into a small space when not in use, and some allow of the frame and line, to be readily removed to the house. Whatever the method of suspending the line, let it be as much out of the passage ways as possible.

A HOME MADE TABLE.—The table which is shown in the accompanying engraving, is one that can be constructed in the farm work-shop during rainy days, and thus afford pleasant occupation for the older boys. A light table that can be easily moved, is one that every sitting room should possess—one that can be drawn up to the fire, or in front of the window, and yet one that is not easily overturned. The kind of wood used, and the degree of ornamentation, will depend upon the lumber at hand, the skill of the person, and the time at his disposal. Light wood, like pine, or white wood, serves best for the top, with its narrow edging, while a stronger wood, like ash, will be best for the legs. The whole table may be made of inch stuff, excepting the edging to the top, which should be thinner. A table thus constructed and afterwards covered with a close fitting cloth will be a very handy addition to the sitting room.



A HANDY SITTING-ROOM TABLE.

SHOE-BLACKING STANDS.—It is not expected that very much of a shine is to be kept on the "every day" farm boots, but those for Sunday and other special occasions, should have a polish, because it adds so much to the neatness of the person at very little cost. A box of blacking and a brush, with a few minutes now and then, are all the necessaries; but the great trouble is often in finding these three elements: brush, blacking, and *time* all together. Too frequently the blacking and brush are put up in some out-of-the-way place, and often unduly separated, so that it takes too much time to find them, and if found, the brush may be dusty and dirty and the blacking spoiled. All trouble of this kind may be saved by having a small Blacking Stand like the one shown in the engraving, in which the "tools" may be safely kept, and are then always at hand. A thing is handy only when it is at hand, and in little matters like the one in question, this is the all important point. This stand serves a double purpose: as a place to keep the brush and blacking, and when the cover is turned back, a rest for the foot while the boot or shoe is being polished. This is far better than using a chair, both in its being more handy and saving the latter from being marred. The older boys, and the young men especially, should provide themselves with such stands, either by making them, or by purchase, as they can be obtained at the furniture stores in a great variety of shapes, sizes, and styles, some of which make very nice stools, and can be used as a "step" for reaching high objects.



A HOME-MADE BLACKING-STAND.

BOYS & GIRLS' COLUMNS.

The Doctor's Talks.

Several have written about kites; one boy wishes to know how to make such kites as are sold in the stores, and another asks something about kite-flying. In the flying of a kite we have an excellent illustration of an action of force that I have not referred to in these Talks, but which may well come in here. But before we can fly our kite we must make it. Some boys get a great reputation among other boys as kite-makers; their kites always go up, and behave themselves when they get up. I don't know how it is now-a-days, but such boys used to get a great many pennies from other boys, with more money and less skill. As I recollect about the kites of the famous makers of my boy days, they were always

LIGHT AND STRONG,

and I think that there was something about the "belly-band" that they prided themselves upon knowing. The two forms of kite the most common are the "Bow Kite," and the "Three Stick" or "Six-Sided" Kite. By far the handsomest kite in my opinion is the Bow Kite (fig. 1), and I do not think it is altogether because it was the only kind we had when I used to fly kites. To make a kite of this kind that will fly well, requires more skill than the other. All the material should be as light and as strong as possible. For the stick, dry and straight-grained pine; for the bow, a piece of a barrel hoop is generally used, whittled down narrow, but the best is a piece of rattan, which for a small kite may be split. The cord should be cotton or linen, as it is much lighter than hemp of the same size. For paper, boys usually take newspapers, and as there is much difference in the kind of paper these are printed on, you will need to pick out the strongest. Then with some common flour paste, some strong linen thread, a knife and scissors, you are ready to go to work. You may make a kite entirely by guess and have it fly well, but boys should always learn

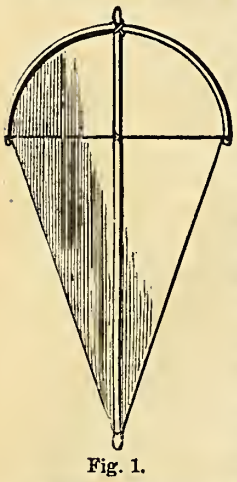


Fig. 1.

TO WORK FROM MEASURE,

when in building a kite, a sled, or a bird house. It is so long ago that I have forgotten the proportions we found best, but I found some in an English book. I made a drawing on a large piece of paper according to the measures, and as the kite looks right, I venture to give them. Length of stick, 40 inches; bow, 30 inches. Make a notch near each end of the bow, and then find the exact center of the bow, by balancing it on the edge of your knife, and mark the place with a small notch; 4 inches from the top of the stick make a notch to admit the bow. As to the stick, it should be carefully worked down by whittling as small as may be, and yet be strong enough, and here you must use your judgment; point the top, and make a notch to let in the bow a short distance, but not enough to weaken it, put the bow in place, and bind it fast with a few turns of thread. Then tie a cord to one end of the bow, carry the cord once around the stick, and then to the other end of the bow, bring the bow into shape; then fasten the cord tight; the distance from each end of the bow to the stick should be 10 inches, and the string should cross the stick just 10 inches below the point where the bow is fastened to it. Now pass the string from one end of the bow down to the bottom of the stick, through a deep notch, made there for it, then up to the other end of the bow, make it fast, and the frame is finished. To put on the paper, lay the paper on a table, and if one piece is not enough, join two by pasting them together with a lap of about half an inch. Cut the paper an inch larger every way than the frame. Before pasting, cover the table with newspapers, so as not to soil it with paste. At the ends of the bow, and at several places between the two ends, cut notches through that part of the paper that is to be turned over, so that it can be pasted without any bad wrinkles. Apply paste to the inch margin, and turn it over neatly, and let the paste get thoroughly dry before handling the kite. Some make a point to the kite; if this is wanted, measure four inches upon the bow, each side of the stick, and cut a small notch at each place, and make a notch at the top of the stick. Tie a piece of cord at one of the notches on the bow, pass it over the end of the stick to the other notch on the bow, and tie fast; this will make a spear-like point when covered with paper. Your kite is now ready, except two very important things, namely, the

BELLY-BAND AND THE TAIL.

We may call that part of the kite upon which the stick does not show, the front side. You need to make a small hole through the paper from the front, on each side of the stick 10 inches from the top of the stick, and two more holes 10 inches from the bottom; the cord is to be passed through the upper holes with a turn around the stick, and tied very firmly—then through those below, leaving the band quite slack. The string of the kite is to be tied to this. The cord for the tail is tied in a similar manner to the stick at the bottom. The tail is made variously; sometimes one heavy paper tassel is fastened at the bottom; sometimes a long strip of cloth is used, but I don't think anything looks so well when the kite is up as the old fashioned bob-tail; pieces of paper, about 3 inches square, are folded up and fastened upon a string by a loop in it that every boy knows how to make. The tail may be very long (sometimes 15 times as long as the kite) and light, or shorter and heavier; the size is best learned by practice. Some make wings to the kite; these are merely paper tassels, attached at each corner of the bow, and are of very little account.

THE THREE-STICK, OR SIX-SIDED KITE,

Is, I find, thought by some of the youngsters of the present day, to be much the best kind of kite, but to those brought up on the other kind it looks like a very clumsy affair; it is, I think, the kind that one boy refers to as the kite "sold in the stores." These kites, as I have seen them, are made of three light sticks; these have notches at each end and are tied together, as in figure 2. After the tying is securely done, the cord is passed from the end of one stick to that of the next, and so on all around, and made fast at each notch. This frame is then covered with paper, as I described for the other. When dried, the belly-band is to be arranged, and this is quite different from the other, as seen in figure 3. Holes are made through the paper and cord passed through and tied around two of the sticks in such a manner as to make a loop above, and a broader one below, a cord connecting these two loops forms the belly-band, to which the kite-string is to be fastened. A similar loop must be made to which to tie the tail, as you see at the bottom of figure 3; it is made fast near the lower ends of the sticks, its ends passing through holes in the paper. The tail, as in the other, may be according to fancy. A great variety of fancy kites are made, especially by the Chinese, among whom kite-flying is not confined to the youngsters, but is a favorite amusement of the grown up people. Travellers tell us that on certain days all the people engage in flying kites, and the air is filled with monsters of all sorts of droll shapes, from butterflies to dragons; they say it is a very strange sight to see old men with spectacles on their noses, flying kites with as much earnestness as if their happiness depended on it. Sometimes these strange

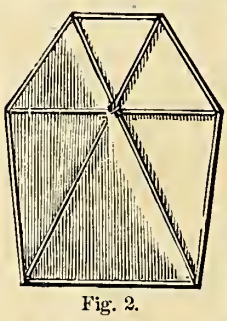


Fig. 2.

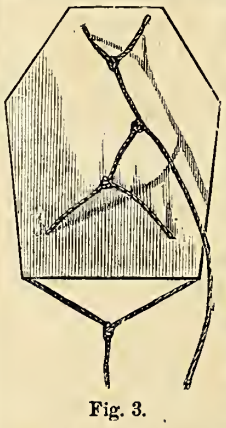


Fig. 3.

CHINESE KITES

are imported; but they are usually of the smaller kinds and shaped like butterflies or birds; those that I have seen have the frame work of split bamboo or rattan, and covered with a paper very unlike anything we have, and I think that some are covered with a very thin cloth. They are ornamented by painted designs, the most common being large eyes. They probably put eyes on their kites for the same reason that they put them on their *junks*, as their clumsy vessels are called. These always have at the bow a pair of enormous staring painted eyes. Upon being asked why they made eyes upon the junks the reply was: "No hab eyes, how can see?"

IN FLYING THE KITE,

you need string, in fact, as the boys say—"no end of string," and here as in everything else about the kites "light and strong," will apply to the string. It is not easy to get a kite up in a poor wind; but if there is a good breeze and you have a good kite it will go without trouble. All of you who have raised a kite know that the best way is to let another boy hold it, while you, having let out a good length of string, start and run against the wind, when instead of following along after you the kite will go up. Why it should *rise*, and if the wind blows, and you give it string it should keep going up, is a matter we must leave until another time; it has taken us too long to make our kite for us to fly it now. But in kite-flying let me give the boys—and girls too—

ONE SERIOUS CAUTION.

Never fly a kite in the road. Nothing so frightens horses as to see a strange object *above* them; I have seen horses that would not mind the noisiest rail-road train, made perfectly frantic by a glimpse of a kite in the air at no great hight. There is nothing that will so thoroughly frighten a horse as a kite. This should be borne in mind when enjoying the sport, for it would make you very unhappy should your pleasure be the indirect cause of a serious injury to some one, as might be the case.

Picture Puzzle.—This is a rather strange looking shrub, and the animal—fox or woodchuck we will suppose—at the base appears to be in trouble, one of his paws having found its way into a steel trap. There is

still more to the picture, which, no doubt, all will be able to see. Much of the pleasure to us, connected with this picture, is that it was designed by a little boy, and the sketch was sent to us to see "what we thought of it." How do you like the ingenious picture? Does it *catch* you?

Our Puzzle-Box.

CHARADES.

1. My first is a cover just twisted around.
   My next is a fair lady's name.
   My whole a most awkward position is found.
   May you never be placed in the same.

2. My first names a certain class of individuals; my second is an exclamation; my third is a kind of dwelling, and my whole is a fish. AUDAX.

3. My first in winter oft you see.
   My next near you is sure to be.
   My whole is found on the shore of the sea.
   CARTER.

NUMERICAL ENIGMAS.

1. I am composed of 22 letters:
   My 9, 19, 8, 21, 12, is a piece; so also is
   My 13, 20, 6.
   My 1, 18, 19, 22, is something sacred.
   My 15, 17, 7, is generally despised.
   My 5, 10, 18, 3, 14, is much used in building.
   My 11, 4, 19, 12, 3, is a girl's name.
   My 16, 2, 17, is a boy's plaything.
   My whole is a well-known proverb. MAMIE.

2. I am composed of 32 letters:
   My 4, 14, 31, 28, 8, 24, 3, 9, is an Egyptian vegetable.
   My 13, 30, 7, 23, 12, 9, 30, 2, was a queen of Persia.
   My 17, 15, 30, 15, 22, 6, 23, 21, was a prisoner with Paul at Rome.
   My 23, 10, 3, 32, 16, 11, 21, 1, was a precious stone in the Highpriest's breastplate.
   My 26, 14, 23, 15, 27, 25, 20, 12, was a city of Macedonia.
   My 29, 5, 18, 10, 29, 27, 5, 19, is a bitter herb.
   My whole is a verse of Psalms. ISOLA.

ALPHABETICAL ARITHMETIC.

L N S R) B E G O A K G S (E K S K N
O E L E

L S R R A
L S A L O

L L G K G
L S A L O

L A G K S
L L B A L

E R B

DOUBLE ACROSTIC.

The initials and finals form a bad habit in reading.
1. Ample. 2. A precious stone with head engraved on it. 3. A people. 4. A number of persons in company.
WILKS.

ANAGRAMS.

1. A Count? O music!
2. Saves Notaries.
3. Patent toes.
4. Spruce brides.
5. Tidy vail.
6. Peter, mind deer.
7. Rob's chip chair.
8. Do show a finger.
9. Metal portion.
10. Drew ranges.

DECAPITATION.

(1) Entire I'm found on many a farm,
And when I've lost my head,
(2) I'm useful found my whole to cook,
And turn it into bread.
(3) Once more I must beheaded be,
Would you enjoy your food,
Unless I helped you with the bread
'Twould do you little good. E. J. D.

CROSS-WORD.

My first is seen in autumn, but never in the fall;
My next is seen in cricket, but not in bat or ball;
My third is in the primrose, but not in hedge or bower;
My fourth is in the fortress, but not in wall or tower;
My fifth is in the forest, but not in bush or tree;
My sixth is found in laughter, but not in song or glee;
My seventh is found in butter, but not in cream or milk;
My eighth is seen in muslin, but not in wool or silk;
My ninth is found in herring, not in all kinds of fish;
My tenth is found in platter, but not in cup or dish:
My whole is a misfortune,
No matter how it came,
Sometimes attributed to fate,
E'en though yourself to blame.

PI.

A makerr fo Peticane Rilveel si ta cone sonlimun, itrymoon dan lymeit: "spectre het sabrestremman fo nay hotnes icecnenocs chiwh odbuts, chiwh ksese, chiwh kesil treteh ot ster ni thaw si ngave, dan veen ot tarciditonc stifie, hant ot figsidrue het nownunk hurtt yh vignig tl tafursec exdif dan reshapp thifunfaul."

METAMOREMS.

It is a long time since we had any of these puzzles, and as you may have forgotten what the various letters, as old Roman numerals, stood for, and as they are not to be found in every dictionary, we give them here.

A—500	G— 400	N—900	T— 160
B—300	H— 200	O—0 & 11	V— 5
C—100	I— 1	P—100	W— 55
D—500	K— 250	Q—500	X— 10
E—250	L— 50	R— 80	Y— 150
F— 40	M—1000	S— 7	Z —2000

(Of conrse the W was not nsed in Rome, hnt we make two V's of it, and credit it with 55 for our own nse and benefit.) *Example.*—16001005002000. Ans. Topaz (160—0—100—500—2000).

1. 15050055900.
2. 3002508015050.
3. 500900400.
4. 40080160150.
5. 20001000250.
6. 5150505001900.
7. 1000900525010.
8. 500501000200050
9. 300802505005000
10. 10050500150

ANSWERS TO PUZZLES IN THE MARCH NUMBER.

SCATTERED SQUARE.

P L O W
L O V E
O V A L
W E L L

METAGRAM.—Master (or stream); out of which may be made the words—as, sat, at, tea, a, rat, meat, stare, east, smart, set, star, steam, rate.

CHARADE.—Thousand.

CROSS-WORD.—Be industrious.

BIBLICAL ENIGMA.—Remember now thy Creator in the days of thy yonth.

ANAGRAMS.—1. Mythological. 2. Frontispiece. 3. Inordinate. 4. Influences. 5. Substantial. 6. Unfortunate. 7. Engineers. 8. Impossibilities. 9. Hybernating. 10. Frolicsome.

SYNCOPATIONS.—Blink, link, ink, in.

CONCEALED ARTICLES.—1. Kennel. 2. Spade. 3. Hoe. 4. Rake. 5. Well. 6. Shovel. 7. Pail. 8. Bench. 9. Stool.

TRANSPOSITIONS.—1. Baker, break. 2. Sister, resist. 3. Medal, lamed.

DOUBLE ACROSTIC.

Monument—Memorial.

M— nshroo —M
O— bscur —E
N—ottingha—M
U— mb —O
M— andato —R
E— mpol —I
N—icaragu—A
T— rivia —L

DROP-LETTER WORDS.

1. Imprisonment. 2. Malevolent. 3. Consternation. 4. Circumstance. 5. Landscapes. 6. Uncongenial.

WORDS ENIGMATICALLY EXPRESSED.

1. Barbarous. 2. Something. 3. Farthing. 4. Kindred. 5. Equipage. 6. Tendous.

BLANK ANAGRAMS.—1. Brigade. 2. Rheumatism. 3. Illuminator. 4. Gladiator. 5. Metamorphoses. 6. Troublesome. 7. Envenomed. 8. Together.

NUMERICAL ENIGMA.—Arithmetic.

ILLUSTRATED REBUS, No. 474.—As the whirlwind passeth, so is the wicked no more: but the righteous is an everlasting foundation.—Proverbs x., 25.

No. 476. Illustrated Rebus.—By a little careful study some valuable advice may he obtained.

A River Hunt.

When DeSoto discovered the Mississippi River, it is said he was almost beside himself with delight, and felt abundantly paid for all the time and trouble given to the search. It is hoped that a like feeling, though in a smaller degree, may fill those of our young readers that may now set out on a River Hunt. The "large streams of water flowing through the land" are brought much nearer together on our peculiar map than they are in nature, and again they do not have that resemblance to each other that the ordinary geography gives them. The first river which we will set out to find rises in a lake in the western slope of the Rocky Mountains, and after flowing south some distance, forms a part of the boundary between a State and a Territory. It is full of remarkable bends, rapid throughout, and has cataracts in the mountain gorges. Its length is 1,200 miles. The tributaries are noted for the length of their names.—No. 2. After a winding course of about 1,500 miles it flows by a delta into the Atlantic Ocean. The delta is of great size, and the mouths are very numerous. The land drained by this river is 250,000 square miles, most of which is occupied by a vast woodless plain. There are two remarkable rapids in the stream in which the natives are often dashed to pieces in their attempts to pass them in canoes.—No. 3 has its source on the borders of the United States, and after flowing in a southerly direction, passes into a large Sound, and thus to the ocean. On its way it forms the boundary between two important States, and the valley throughwhich it afterwards flows bears its name, and is noted for its fine farming land. The State is also of the same name.—No. 4 is a small river of only 135 miles, and a tributary to one that flows by the side of the largest island city in the world. This short river flows through one of the finest regions in this country. Its name comes from a tribe of Indians which once lived in its valley.—No. 5 begins at the foot of a great lake, and afterwards serves as a portion of the boundary of the United States. After a run of 750 miles, it expands into a gulf which bears the same name. If not the longest, this is one of the largest and most important rivers in the world. It is noted for its beauty, celebrated cities, and many islands. A trip down this stream is now frequently taken by pleasure seekers.—No. 6. This great river is, like many others, formed by the union of smaller ones. It flows through treeless plains, and in many places the banks of the river are very high and steep. Sometimes these gorges are 7,000 feet, or almost a mile in perpendicular hight. The country along this river is noted for its relics and remains of races of people that lived many hundred years ago.—No. 7 is one of the smaller rivers, but it has a *big* name. Its course is south, and many of our boys and girls will have to go South to find it. This is no reason why it was put near the bottom of our map. It flows into a bay, and then the water passes into a gulf.—No. 8. This is a small river wholly within the borders of a single State, and empties its water into the ocean near a cape of the same name.—No. 9 is one of the main branches of one of the leading tributaries of the largest river in the new world. This is a very familiar river to those who live in a large city, noted for its iron foundries and the smoke that is constantly hovering over it.—No. 10. The leading river of a large lumber State. It receives a number of tributaries on its way to the bay of the same name, which is of Indian origin, as is the case with many American rivers.—No. 11 flows through a comparatively level country, and adds its waters to a great south-flowing stream. The country drained by No. 11 has suffered greatly from the grasshoppers in years past.—No. 12, wholly within a State better noted for its maple sugar, fine sheep, and green color of its mountains, than the extent of its rivers—in fact, this one is not generally called a river. It flows into a large lake of remarkable beauty, and noted for its historical associations. Some great battles were fought near this river something over a hundred years ago.—No. 13. "Last but not least." The name is long, and it should be to correspond with the river, which, with its tributaries, is the longest in the world. The name of this river, sometimes spoken of as a "Father," is noted for something which we will put to our young readers: "What is that which runs and never flies—legless, wingless, with four *eyes?*" To go from one end of this mighty stream to the other—from the little clear lake up in the North to the great gulf in the South—all along through that great Valley, with all its fertile acres, which is the pride of our great land—would be a long and a pleasant journey; but having discovered—or at least made the discovery easy—we will leave the readers to decide the matter of further travel for themselves.

A MAP OF SOME STRANGE LOOKING RIVERS.

Another of the 'Ologies.

Some one asks, "Why don't you have some more of those 'Ologies?" There are a great many "'Ologies," and most of them are too hard for boys and girls to understand. In February we selected *Pomology*, because we thought—yes! we knew, that fruit was a subject about which young people liked to hear. The study of the various kinds of strawberries, especially when they are ripe, is pleasant—to learn to distinguish in taste between the finest kinds of pears, peaches, and grapes, is both interesting and agreeable. For young folks, there is probably no 'ology that stands ahead of Pomology, but if we must talk about another 'ology, let us select ZOÖLOGY. This word means a "telling about animals," and a person who can tell about animals—that is, can say a good deal concerning animals—is a *Zoölogist*. "But why Zo-ologist?" you will ask. The "ology" part of the word you understand, the first part is also from the Greek, from *Zo-on* (in two syllables), the Greek word for an animal. A boy or girl that makes a study of animals may in time become a Zoölogist. There are a number of men, and some women too, who spend most of their time in finding out all they can about various animals, and some of the animals they study are so small that they can not be seen without the use of the magnifying glass or microscope. "But what is an animal?" some one asks. That is a harder question to answer than you think for. All living things—all things that grow and

dle—are either animals or plants—so the Naturalists say. Now, what is the difference between an animal and a plant? It is easy to see that a cow is not like a rose bush, or a mouse has not much in common with a maple tree—there are a great many differences between these; but when the *Zoölogist* comes to study the little, minute forms of life, so small that he must use a microscope—so small that a drop of water could contain thousands of them—he says he can not tell the animal from the plant. But for our purpose an animal is a living being that can move around and has feeling; eats, drinks, and sleeps. How many animals are there on a farm? Some will guess five; others ten, and some will go as high as fifty.

Fishing and Fishers.

There is something about fishing that is very attractive to youth. The very thought of pulling out a great fish—hand over hand—is enough to make a boy's heart go *thump!* and make him wish to leave his work, or his desk at school, and try his luck with a baited hook in the lake or the running stream. It has always been so, and it is not likely that the love for catching fish will ever die out. I remember as if it were yesterday the first time I ever caught a fish on a hook. It was a small lake perch, a very appropriate fish for a small lad to get on his hook. But it was not long before I added another to my string, the rushing, roaring, boisterous freshet-river of a few weeks ago—now so faint in its music and so lazy in its motion. The best pool has been found—it is not always the largest—and by the looks of things the boys have been at work for some time—but still they come—I mean the fish, not the boys. What a nice fish the largest boy in the front of the picture is taking from its watery home. How he enjoys the work of bringing him to the shore; but on the other hand, what a new world is suddenly opened to the eyes of the astonished fish, suspended there in mid-air above the pond! It will be observed that the fisherman on the left of the pond does not take any delight in the captnre of this fish. The truth is, he has had

THE BOYS' MAY HOLIDAY AT THE POND.

Suppose we should count them, using the number of legs as a guide. How many with four legs?—All will mention the horse, cow, pig, sheep, and dog. That makes five four-legged animals. But there are the mice and rats that most barns contain; the woodchuck is down by the woods, and near him there may be the squirrel, the weasel, the coon, and that bad smelling fellow, the skunk. If we look closely, there are other four-legged animals to be found, but let us go on. Are there any animals with three legs? Not unless one with four legs has lost one in a trap or some other way. Two-legged animals are numerous, and some of them very important—one does not have to go very far from himself to find one of these. There are the birds, and the chickens, geese, ducks, turkeys, etc., all of which are birds.—Are there any one-legged animals? The only one-legged thing common on farms is the milking stool, but that not being an animal, can not be counted here. We shall have to give up our search for animals with only one leg. Here we come to a thought. Are legs in pairs in all animals? We have found them thus far in twos and fours. Are there any animals on the farm with six legs? Just look at the insects; the flies, beetles, bugs, butterflies, etc., of which there are hundreds of kinds on every farm—they all have six legs. If spiders are examined it will be found that they have four pairs of legs. But we can not go all the way from the two-legged animals to the "thousand-legged worms," and see if they are all in pairs, but must take the word of those who have looked over the whole list—the Zoölogists tell us legs are always in pairs.

If we should take the eyes and ears, the teeth and brains, and all the other parts, and find out about them in the thousands of kinds of animals, we should then become Zoölogists. The subject of Zoölogy is a very large one, but no children have the chance of learning about all sorts of animals like farmer's boys and girls. Some of our best Zoölogists have lived upon farms while young. We wish all our many young readers would interest themselves to study animals, and in time become Zoölogists, so far as having a knowledge of common things about common animals will make them such.

after which fortune did not seem to favor me, try as I best could, and no more were taken. Before this, I had done a little fishing on a very small scale in the way of hand-catching among the stones in a little stream that flowed through the farm. With my shoes and stockings on the bank, and my trousers rolled tightly up over my knees, I would wade along the stream until some frightened minnow was seen to dart under a flat stone, when with hands extended around the opening I would corner the poor fellow—provided he did not get out some back way or pass like a flash between my feet or fingers. Sometimes I have succeded in catching much more than I bargained for, when some old crab grasped my toes or fingers as they extended into its secluded hiding place.—But the little slippery fish did not always get away, and in the course of an hour or so I sometimes had a number of them in my little tin pail. Frequently I made a small pond for my fish and put them in it; but better still—for me at least—was the watering trough at the well near the barn, into which I put my minnows, and with stones and pieces of brick made them a place to run under to get in the shade and out of the sight of the horses, and I may add, away from the eyes of a person who came with the horses. But it did not matter much what I did with my little fish, something would happen to them, and it was frequently found necessary to get a new supply from the brook to keep up the stock. In the course of a few years I outgrew this pail and finger-fishing, and with a line made of strong thread—shoe thread—a hook which had once served as a pin, and a few worms from the chip dirt or from under stumps, overturned many times a year for bait, I would go with the neighboring boys for an afternoon of fishing in the pools and deep places in the heads, and at the foot of large trees in the same brook from which the minnows were taken when I was too small to handle a line, but too big to stay at home. The artist has given us a view of one of these fishing days—one of those Saturday afternoons in May when fishing is so much enjoyed, because it comes so near to doing nothing—a kind of occupation which the warm, sultry days, so frequent at this season, render doubly inviting.

The stream is not a large one, not to be compared with the rushing, roaring, boisterous freshet-river of a few weeks ago—now so faint in its music and so lazy in its motion. The best pool has been found—it is not always the largest—and by the looks of things the boys have been at work for some time—but still they come—I mean the fish, not the boys. What a nice fish the largest boy in the front of the picture is taking from its watery home. How he enjoys the work of bringing him to the shore; but on the other hand, what a new world is suddenly opened to the eyes of the astonished fish, suspended there in mid-air above the pond! It will be observed that the fisherman on the left of the pond does not take any delight in the captnre of this fish. The truth is, he has had "bad luck," and it begins to tell npon his face, which is growing long as the sun is getting low. He has either had a bad hook, poor bait, nnfavorable light, a shallow place, pnt his line too deep, or held his line wrong in some way, so that the fish have gone to more inviting hooks. It is sometimes hard to see just why the boy at yonr side will catch the fish right away from your book. The little lucky fellow on the opposite side of the pool has a fine string of fish, and is evidently telling something to that effect to his unfortunate friend. He appears to be so well satisfied with his afternoon's work that he will soon go home and exhibit his catch to the older members of the family—and perhaps find out how the fish taste, when nicely cooked, before he goes to bed. The dog, though only a "looker on," evidently "sees most of the game," and is as much pleased when a good fish is caught as any one else in the fishing party. From the way the nearest cow pricks up her head and ears, there must be some shouting being done by the boys—over the capture of the biggest fish of the day. But the boy must look out or it may get away and *flop* into the pond again, as one is seen to be doing, to a boy's dissatisfaction. Many fishermen believe that when a fish thus regains the water, and is in the society of bis uncaught friends, he communicates his experience to them, and cautions all the rest against taking any tempting worm or fly that may be presented. From that hour fishing is dull work. "They won't bite." So the story goes. That there is a fish-sympathy, though "cold-blooded" in its nature, is not unreasonable to believe.

I can not linger longer over this scene of my boyhood pleasure; and the boys must soon go too, and drive up the cows and see to their other chores; but as a last word, while they are trying for their final *catch*, the "last but not least"—the "just one more"—let me say that there is much fishing which they will find through life, though it may go by other names—it may be a hook well baited and thrown into the busy whirlpool of business—for money, or into society—for friends, station, honor. In this fishing there may be *some* "luck," but in the long run it is the patient, untiring, upright, honest fisherman that goes to bis rest in peace.

UNCLE HAL.

Results of Vivisection.

Interesting Experiments—Prof. Mott shows how People are Taking Poison in their Daily Food—A Prolific Source of Dyspepsia Scientifically Demonstrated.

From the New York Tribune.

A series of highly interesting experiments with dogs has been lately made by Prof. Mott, and in the *Scientific American* of Feb. 7 a detailed account is given. The disclosures are so unpleasant and startling, coming home, as they do, to every one, that we believe they should be given the greatest publicity. The effort Dr. Mott is making to purify our articles of kitchen use should receive the support of every thinking man and woman. There has been too much indifference of this subject—an indifference that has resulted in Americans earning the title of "a race of dyspeptics." Poison year after year is introduced into the stomach with a criminal disregard to consequences that is appalling. If every purveyor of domestic supplies will carefully consider the result of Dr. Mott's experiments, as detailed in the *Scientific American*, one of the greatest, if not the greatest, of these evils will be corrected.

Dr. Mott says: "The introduction of alum in flour, for various purposes, has been a trick of the baker for the past 100 years. Fortunately for society, its introduction is limited now to a few unscrupulous bakers. In England, France and Germany it is an offense punishable by fine and imprisonment to use alum in any connection with articles of food. It should be so in America."

The Royal Baking Powder Company, of this City, a long-established corporation, celebrated for the absolute purity of their goods, some time ago commenced a vigorous warfare against many of their competitors who were indulging in hurtful adulteration. The contest excited great interest in scientific circles, in which Prof. Angell, Dr. Mott, and other leading lights took a very prominent part. The experiments of Dr. Mott are a result of this discussion, and go to prove conclusively that the most dangerous adulteration that a community has to guard against is alum in baking powder. In his paper, the Doctor says: "It was with difficulty I found a suitable place to conduct the experiments so that the animals would not disturb the neighborhood; but, through the courtesy of the Commissioners of the Dock Department, I secured a shed on their premises, foot of Sixteenth-street and East River. This shed I had completely remodeled into a suitable house, having the dimensions of about 16x14x12 feet. Sixteen stalls were made inside, having the dimensions of 3½x2x2½ feet. The bottom of each compartment was covered with straw, making a pleasant bed for the dogs. I then secured 16 dogs from the Pound, which were all carefully examined to see if they were in a perfect state of health. None but the strong, healthy dogs were selected. The breed, age, food, color, and weight of every dog was carefully noted. Each dog was then confined to a stall and securely chained, and they all received a number, from 1 to 16. I commenced my experiments on the 9th of September, and finished Dec. 3. My assistant was with the dogs from morning until night, and never left the animals without first securely bolting and locking the dog-house. No stranger was allowed to enter the house unaccompanied either by myself or my assistant, and the dogs never received a mouthful of food or anything else from any one except from my assistant or myself. I will now detail the result of my experiments:

"Dog No. 1—Breed of dog, coach. Age, 1 year. Health, perfect. Food, bread and crackers. Color, spotted black and white. Weight, 35 pounds.

"To this dog, on the morning of the 9th September, was given eight biscuits at 8:10 o'clock. The biscuit were made by myself as follows: One quart sifted flour, 20 teaspoons alum baking powder, 2 cups water, 1 tablespoon butter, 22 biscuits made, weighing 27 ounces; time of baking, 20 minutes.

"At 11:30, just three hours and twenty minutes, the dog was taken very sick, vomiting profusely; his vim and brightness of eye had departed, and he trembled considerably in his limbs."

Experiments were then made upon three dogs with biscuits containing only 10 teaspoons of alum baking powder. The result indicated that some animals are more liable to yield to the effects of poisonous substances than others are. When, on the other hand, three other dogs were fed with biscuits made with pure cream of tartar baking powder, no ill effects were experienced. The ate and ate with an evident relish, day after day, and even whined for more.

It was next necessary to discover what effect alum has on the solvent power of the gastric juice. In order to obtain some pure gastric juice, a curious device was resorted to. Dr. Mott sent several dogs to Prof. Arnold, Medical Department of the University of New York, who inserted a small metallic tube directly through the skin and into the stomach of each one of them, when the dogs were in a perfectly healthy condition. Prof. Arnold sent to Dr. Mott some gastric juice, which was produced by tickling the lining of the stomach of the dogs with a feather or glass rod, which caused the gastric juice to flow out of the tube into a receptacle placed underneath the dog to receive it.

Dr. Mott, aided by Prof. Schedler, then began some experiments with the four samples of gastric juice, which he had received from Prof. Arnold, to discover the effect of the gastric juice in which alum has been dissolved upon fibrine, a white, very easily digested substance having a basis of coagulated blood. The fibrine was imperfectly digested, and the experiments were very important, as showing that alum can check the digestion of so easily digested a substance as fibrine. They indicate, therefore, how dangerous it is to introduce these two salts into our stomachs, if we do not wish to excite indigestion and dyspepsia. Further experiments showed that the digestive power of the gastric juice is entirely destroyed by alum, so far as its power of dissolving the more indigestible substances, like the boiled white of an egg, is concerned.

Dr. Mott then determined to learn whether alumina could be found in the various organs of the body if a dog was fed with hydrate of alumina. He found a considerable quantity of the stuff in the blood, liver, kidneys, and heart.

The Doctor goes on to describe the different symptoms exhibited by these dogs as they passed through almost every phase of animal agony until they were left in a complete state of physical prostration. To those especially interested in the details of this subject the article in the *Scientific American* supplement will give most complete information, and we will spare the sympathetic reader the account of the sufferings of these dumb brutes.

Dr. Mott's conclusions, after making these experiments, are of vital interest to every one who either makes or eats bread, and therefore concern all.

"These experiments," said he recently, while speaking before the American Chemical Society, "clearly demonstrate that the salts left in the biscuit when a cream of tartar baking powder is used are perfectly harmless, but when an alum baking powder is used are very dangerous, for in every case where dogs were fed on biscuits made with such powders the dogs were made very sick, causing them to vomit profusely, lose all energy, and show weakness in their limbs."

It is a clear and triumphant corroboration of the assertions of the Royal Baking Powder Company, and entitles them to the gratitude and support of the community they are endeavoring to protect. As they claim, and Dr. Mott has shown, bread made of alum is totally unfit for human or animal food. 'Tis true, in the bread of domestic consumption there may not be as large a proportion of baking powders as was in the bread used by Dr. Mott, and that accounts for the fact that the symptoms in the reader are not so well defined as they were in the experiments in question. How many there are of our immediate friends suffering from this evil, scientific investigation will alone reveal; but many a lingering and suffering invalid, with no defined idea of his trouble, can easily trace it to its source by stopping the use of alum powders, substituting some brand like the Royal Baking Powder, whose manufacturers have a competent chemist in their exclusive employ, who rigidly analyzes every ingredient before its incorporation into their powder. The old cry of "honesty being the best policy" may be worn threadbare, but its truth will hold forever, and while adulterations and short weights abound, it is a pleasure to see at least one in the trade strenuously endeavoring to give full weights and pure goods.

The advertisement of "Aultman-Taylor" Threshing Machinery, which attracted such general attention among farmers and threshermen in our April number, will appear again in June.

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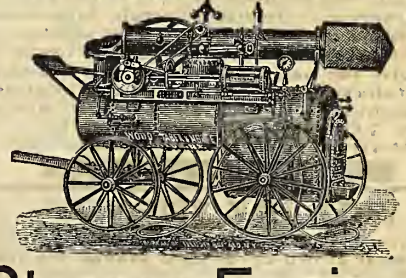

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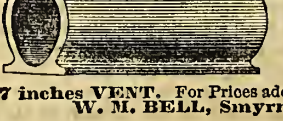

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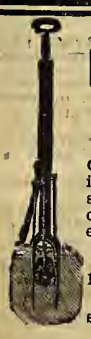

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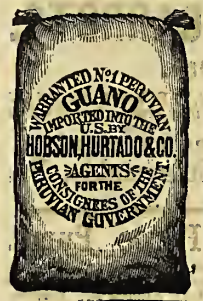

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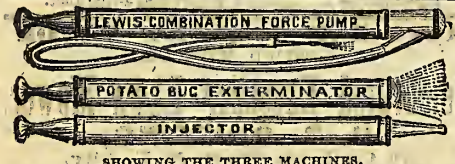

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Three machines combined for half the price of one. The cut represents the three machines embraced in my Pump. $10.00 to $12.00 worth of machines for $5.00. Our Agents are making $10.00 to $20.00 per day. Sample sent express paid to any Express Station in the U. S. and Ca. on receipt of price. Thus, you can get one of these Pumps as cheap as though retailed at your door. We do this only for a limited period to introduce them rapidly. See displayed adv. in last month's *Agriculturist.* Send for descriptive circular, price list, terms to agents, etc., to

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THE BEST INSECTICIDE EVER USED. # London Purple. **(Trade Mark.)**

Sold by all Wholesale Druggists and Stores throughout the United States. If not obtainable, of nearest dealer, send direct to sole manufacturers, **HEMINGWAY'S LONDON PURPLE COMPANY (Limited),**
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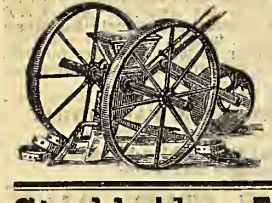

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Acknowledged by all farmers to be THE BEST AND ONLY PERFECTLY SUCCESSFUL Wire Check Rower. Will plant FIVE ACRES more a day than any other, as the Wire is not removed from the machine in planting the entire field. Eleven years' use has demonstrated the fact that the only successful way to use a rope or wire line is for the machine to transfer it into position to plant the next row. Do not buy a Wire Check Rower unless the line crosses the machine, as it will last twice as long as a wire run on one side, which must be dragged into position regardless of obstructions met as the planter crosses the field, and which causes friction, inaccurate checking, and breaking of the wire. In our Check Rower the elasticity of the wire and its large curve in passing over the machine, prevents a particle of bending or displacement in the wire, such as occurs in Check Rowers where the line is dragged into the pulley at an angle and high tension, and both bent and displaced as it enters the pulley. Dragging the line into position also causes canting, or lopping, of the planter, by which one row is planted too deep and the other too shallow. Our ROPE CHECK ROWERS are too well and favorably known to call for any extended notice. For full description of our WIRE CHECK ROWER and the three styles of ROPE CHECK ROWERS which we manufacture, write for a circular.

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Magnum Bonum (not the English variety of same name), **548** *Bushels grown in* **60** *days from one acre of ground without any manure whatever.* **$100.00** *in cash premiums to be paid in* **1880** for the largest yields from one lb. of seed. Price by mail, prepaid, 1 lb. $1.00, 3 lbs. $2.00, 4 lbs. $2.25. By frt. or ex. at purchaser's expense, ¼ peck $2.00, 1 pk. $4.00, ½ bush. $6.00, 1 bu. $10.00, 1 bbl. $20.00.

THE MAMMOTH PEARL. *For some unaccountable reason my adv. of The* **Mammoth Pearls** *failed to appear in Apr. No. Am. Agr.* But I will now say that I will supply this *King of Potatoes* to the readers of this Jonrnal, by mail, prepaid, 1 lb. 60 cts., 3 lbs. $1.25, 4 lbs. $1.50. By frt. or ex., charges paid by purchaser, ½ bu. $1.50, 1 bu. $2.50, 1 bbl. $5.00, 5 bbls. $4.00 each, 10 bbls. or more $3.50 each. *For fuller particulars of above, with testimonials, also Vegetable and Flower Seeds, etc.,* address

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FOR STACKING OUT IN FIELDS OR MOWING AWAY IN BARNS.

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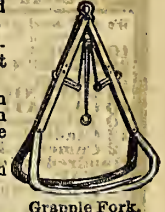

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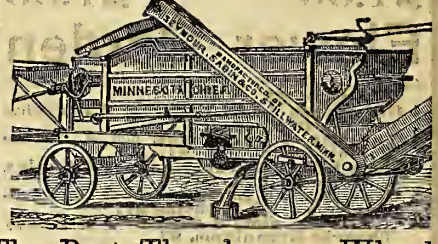

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It is not a Vibrator, neither is it an Apron Machine. It is wonderfully simple in its arrangement. It is admirably perfect in its threshing and separating qualities. It saves all the grain, and cleans it ready for market. It runs easily, is constructed durably, is finished beautifully, is the most economical, least expensive, and altogether the most satisfactory machine in the market.

It will handle wet grain as well as dry. In threshing Flax and Timothy it has no equal, threshing and cleaning both as well, and nearly as rapidly as Wheat, and requires no change except the sieves. It has more square feet of separating and cleaning surface than any other machine made, and cannot be overloaded. It is both over and under blast at the same time.

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We will with pleasure send you a sample copy of our **MONTHLY GLEANINGS IN BEE CULTURE**, with a descriptive price-list of the latest improvements in **Hives, Honey Extractors, Artificial Comb, Section Honey Boxes,** all books and journals, and everything pertaining to Bee Culture. *Nothing Patented.* Simply send your address on a postal card, *written plainly*, to
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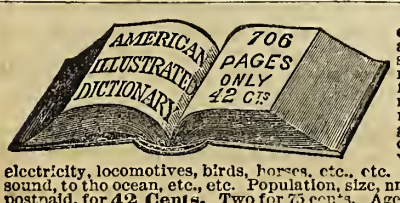
THE CLOVER-LEAF, a 4-page, 24-column farmers' paper, containing valuable information on the culture and harvesting of clover for seed. Sent free to every farmer sending us his name.
BIRDSELL M'F'G CO., South Bend, Ind.
Say you saw this in the *American Agriculturist*.



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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from Page 179.

In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations are seldom repeated, as those who desire information on a particular subject can cheaply obtain one or more of the back numbers containing what is wanted.

Back numbers of the "American Agriculturist," containing articles referred to in the "Basket" or elsewhere, can always be supplied and sent post-paid for 15 cts. each, or $1.50 per volume.

The German Edition.—All the principal articles and engravings that appear in the *American Agriculturist* are reproduced in the German Edition. Besides these, there is a special department, edited by an eminent German cultivator. Our friends can do us a good service by calling the attention of their German neighbors and friends to the fact that they can have the paper in their own language, and those who employ Germans will find this Journal a most useful and acceptable present.

Bound Copies of volume 38, and of every previous volume back to Vol. XVI. (1857), neatly bound, with gilt backs, Index, etc., are supplied at $2 each (or $2.30 if to be sent by mail). See Publishers' Notes, 2d cover page.

Clubs can at any time be increased by remitting for each addition, the price paid by the original members; or a small club may be made a larger one at reduced rates, thus: One having sent 6 subscribers and $7, may afterwards send 4 names more and $3, making 10 subscribers for $10.00; and so for the various other club rates.

Terms to New South Wales, New Zealand, Australia, Africa, etc.—To several inquirers. Under the latest revision of the Postal Union Regulations the price of the *American Agriculturist* (either English or German edition), including postage *prepaid* through, will be covered by 7 shillings sterling per annum. This applies to the above countries, and to all others embraced in the General Postal Union. The simplest mode of remittance is by Postal Money Orders, payable in London, to the order of Orange Judd Company. These can be readily cashed in N. Y. City at a slight discount, which the publishers will cheerfully pay. For Club rates, (postage included), see our second cover page, and reckon 22 cents to the shilling sterling.

Is Corn the Cause of Contracted Hoof?—"B. J. G.," Nashua, Iowa. Corn is a highly carbonaceous food, and as this kind of food is used chiefly for maintaining the animal heat, too much of it is apt to cause disturbance of the system. The result of overfeeding with corn, is to make an animal feverish, and the feet of a horse are tender spots, on account of the sensitiveness of the laminæ. This is perceived in the easy fonndering of a horse, by overfeeding. A result of fever in the feet, is contracted hoof; so that corn may be the cause of contracted hoof. To feed some bran will avoid this.

Coal Oil Barrels.—"W. W. H.," Blair Co., Pa., wishes to so cleanse barrels which have had coal oil (kerosene) in them that they may be used for vinegar, cider, etc. He has tried burning them out, but without success. If a thorough burning will not make them fit for use, we doubt if anything else will. If any reader can help our friend, let us hear from him.

Sheep Disease in England.—The cable brings an account from the U. S. Consul at Gloucester, Eng., of a serious outbreak of a disease among sheep, in several localities. In this instance, it is "Rot," or "Sheep Rot," and quite distinct from Foot Rot. The Rot is due to "Flukes," which are leech-shaped worms, often found in the gall-bladder, or ducts and liver of sheep. Small numbers of these may be present without manifest injury to the sheep, but when they occur in large numbers, the whole system of the animal is so disorganized, that the term "Rot," best expresses its condition. It is caused by poor food, low damp pastures, and water from ponds and pools. When it occurs, its course is rapid, and no treatment will save the animal. Prevention is possible, by avoiding the causes. One part of the life of the Fluke is passed within the bodies of fresh water snails, etc., and from these it in time reaches the interior of the sheep; for this reason it is important to supply sheep with well-

water, or other water free from these animals. Sheep in which the attack does not amonnt to Rot, have heen cured by a mixture consisting largely of Salt and Spirits of Turpentine. Indeed the free use of Sal is regarded as an important preventive. We learn from a correspondent in Oregon, that Rot has within a short time made its appearance in some localities in that State.

Bronzed Oranges.—The fruit in the Orange groves of both Florida and Lonisiana has of late years been much discolored. The rind becomes, either in part or completely, colored a dark brown. The cause of this discoloration has not thus far heen ascertained, a careful examination by those expert with the microscope having failed to detect anything like fungns, the canse of so many fruit troubles. It does not appear to prevent the fruit from coming to maturity, or to in the least affect its quality. We recently saw some boxes nnloading, on which was marked in conspicuous letters, "Genuine Florida Bronzed Oranges," with the grower's name, etc. This is shrewdly making "a virtue of necessity," and it may be that those whose groves are now free from the defect will be looking for a method by which their oranges can be "bronzed," and thus increase in value.

The Cost of Tillage.—Other things being eqnal, that land which is tilled with the least expense, is the best land. It is not the size of the crop that determines the profit in farming, but the excess of the income over the outgo. If it costs more to keep a corn field perfectly clear from weeds than the value of the increase of the crop caused by that culture amounts to, then, so far as the corn crop is concerned, snch excess of corn is a loss. But the influence of the care bestowed on one crop upon those that follow it, must not be overlooked. It may be the best system that grows a certain crop at a loss in order to raise succeeding ones at a profit. The value, and, therefore, the cost, of tillage, in a well established system, depends very largely on the time and place that is done.

Snakes Swallowing their Young.—While it is a well established fact that most snakes do swallow their yonng, it has been douhted that this was done by venomous snakes. We recently gave an account, showing that Rattle Snakes have this peculiarity, and now comes Mr. C. C. Lohingler, of Alleghany Co., Pa., with a case, or rather cases, in point, which must add the Copperhead to the list of swallowers of their young. Mr. L.'s account is given with great precision and circumstance of time, place, and persons, bnt as we have no reason to doubt his statements, we need give only the results. On Ang. 26th last, on going home from the station he came across a boy of 14, who had just killed four large Copperheads, which he had found together at the foot of a stone wall. Noticing that two of the snakes were much puffed ont, he opened the largest with his penknife, and fonnd its belly full of yonng Copperheads; this led to the opening of all four, and every one had yonng Copperheads, and he took ont in all 34 yonng snakes from four old ones, but did not think at the time to note the number from each. The yonng snakes were from 3½ to 6 inches long, and all showing more or less life. This testimony added to that given last month would seem to be sufficient to settle the question that venomous snakes, like others, do swallow their young.

Teeth as an Index of Age.—"B. A. B.," Cerro-Gordo Co., Ia. The teeth are an indication of the age of animals to a certain extent. They are not exact to a month, or even six months. Animals differ in precocity, and some have their teeth earlier than others. In a heifer, the second permanent incisor appears at 28 to 32 months, the fifth molar appears near the end of the second year, in the back part of each jaw; in the course of the third year, the second permanent molar appears. The third permanent incisor comes after 3 years, but it may not come until near the end of the 4th year. A chart of the teeth may be had at this office, (price $1, post paid), by which their manner of growth can be understood.

Sheep Keeping in Kansas.—"F. M. M.," Girard Co., Ky. Sheep can he kept easily in Western Kansas. About Dodge City is a suitable locality, as it is not thickly settled. For a flock of 1,000, a capital of at least $3.000 will be required. The sheep can he purchased at Denver, Colorado, and driven slowly across the country to Kansas. One man can care for 2,000 sheep.

A Wisconsin Farm Going to Louisiana.—A Grant Co., Wis., farmer writes that he does not like to see hundreds of acres of the very best land, all the manure and sometimes the crops too, washed into the Mississippi and carried down to New Orleans, probably to help form the Deltas. This is a question in agricultural engineering, and the remedy can only he suggested by an inspection of the locality. The situation of the land may he such that it could be thrown into terraces by the plow, and thus prevent washing. Our correspondent does not state whether the land is the river "bottom" and the loss arises from overflow, when diking would be the remedy, or is steep river banks and the washing is from heavy rains. It may be the best use of such land to put it into grass, and thus hold the land.

Sulphur Fumes for Ants.—"E. M. S.," writes from Perth Amboy, N. J., that when he lived in Texas, parties went about with apparatus for destroying ants. It consisted of an arrangement for forcing the fumes of burning sulphur into the nests, and was found very effective, though the price charged by the operators was regarded as extravagant. A similar method has been found useful in California, for the destruction of ground squirrels. Those who have failed with all other methods for ridding their grounds of ants, may act upon this hint. An ordinary bellows could he rigged up to answer.

Out of His Name.—It is very annoying when every pains has been taken, to find, when it is too late, that an advertisement which one man has paid for, is accredited to some other man. Mr. G. H. Rathbun tried recently to tell people that he sold Plymouth Rocks and other fowls at Hartford Conn., but when the advertisement was published, it was made to appear, that it was one J. H.—another Rathbun altogether. G. H. Rathbun is the man who has the famous chickens.

A Feed Rack.—A reader sends sketches of a cheap feed rack and says; "I use 2 by 4-inch scantling, seven feet long for the posts, of which there are three pairs in a 16 foot rack. They should be bolted together at the top; and it is better to bolt the scantling on too." A 2 by 4 scantling is put on each side above the bottom board, shown in an end view of the rack in figure 1. The posts should project a few inches below the bottom board. The arrangement and position of these posts, makes it impossible for stock to get their feet into or upset the rack. It can be used for a part of a fence, around stacks, though

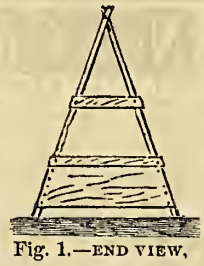

Fig. 1.—END VIEW.

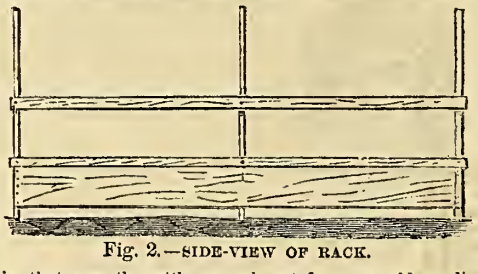

Fig. 2.—SIDE-VIEW OF RACK.

in that case the cattle can only eat from one side, ordinarily they eat from both sides. Figure 2 shows one of the sides of the rack ready for use.

Mucilage from Cherry Gum.—"H. B. D.," there is a most excellent reason for your failure to make mucilage from the gum that exudes from cherry and other fruit trees—it is not soluble in water. Though fruit-tree gums, when dry, have some resemblance to the poorer kinds of Gum Arabic, they are really very unlike. Gum Arabic will completely dissolve in water, but these gums from the cherry, etc., merely swell up, but do not dissolve; no matter how much the mass is stirred and broken up, it will, after standing a while, all settle, leaving the water without any stickiness.

Buying Seeds of Strangers.—A correspondent in Augusta Co., Va., writes that a man passed through his and other counties "selling Swedish Clover Seed, representing it as having been introduced into Penn. in 1876, through the Shaker Seed Co." The seller has since been published in some papers as a swindler, and his seeds as those of injurious weeds. Our friend and a number of other farmers are in trouble, and fear to sow the seed lest they fill their land with vile weeds, and we are written to for information on the subject. The safety of these farmers consists in the fact that it is much easier to get seeds of useful plants than those of weeds. This chap no doubt furnished old clover seed of some sort. But why buy seeds of strangers and believe their nonsense? By consulting the catalogue of any first class seed house they would have found that Swedish Clover was a regular article of their trade. Desirable novelties are not hawked about the country in this way.

Black Leg in Calves.—"H. T. F.," Peoria Co., Ill., writes that he has lost three sucking calves in as many weeks. "I first find them quite lame in the front shoulder, with blood gathering under the skin, which moves with the pressure of the hand. Death soon follows. Upon being skinned, the blood is black, and all next to the skin."—This trouble, called variously "Black Leg," "Black Quarter," "Bloody Murrain," (*Carbuncular Erysipelas*), is most frequent in young, well-fed, and rapidly growing stock. It consists of a remarkable change in the blood, with its accumulation in the shoulder, neck, breast, and near side. The disease is very rapid in its work, and a recovery from an attack is exceptional. If noticed in time, it may be prevented from taking its malignant form by changing the food to a lighter diet, and employing a purgative of 2 to 6 onnces of Epsom Salts, and a little Linseed Oil. The warm weather of early spring is the most favorable time for the development of the disease, and it should be watched for.

Trotting Horses.—At the close of the trotting season of 1879, there were fifty-four horses with a record of 2:20. Of these over one-half are the descendants of Rysdyk's Hambletonian. St. Julian, the fastest trotter on record,—time, 2:12¼—is a combination of the trotting elements of the Hambletonian and Clay families of horses.

English Rental Better than American Proprietary Farming.—Here is what the owner of a farm in Wisconsin writes and we give his view of the matter. Comment is unnecessary:—"Valuable as the *American Agriculturist* is, it would be much more so, if it would leave alone comparisons between English and American farmers. The truth is this: An English Farmer on a good rented farm with any energy of holding it for any length of time, is infinitely better off than an American farmer, and is placed in a much better position to make money: that is paying a rent of $5 to $10 per acre annually, in England, is better than owning land in America. I know of what I speak. I have farmed in England. This is the third and last time that I have been in the United States. Probably you think me crazy—maybe I am. I am just crazy enough to go right back again and rent a farm in England. What is a rent of $5 to $10 or $15 per acre in England for good land, compared to the prices they realize for products, and compared with our prices."

An Unfruitful Vine.—A correspondent at Dobbs' Ferry, N. Y., writes that he has an "Isabella" vine 8 or 10 years old that blooms abundantly every year, but bears no fruit. He has tried severe pruning, no pruning, and enriching the soil, but all to no purpose, while other vines of the same variety near by have an abundance of fruit. Our friend does not wish to destroy the vine, as it affords shade where it is needed, and asks: "What is the trouble with the vine?"—We think he has answered the question very completely: It does not bear. The vine may be a chance seedling, and it is a very common thing for seedling grape-vines to bear only staminate or sterile flowers. Or it may be a sport; it sometimes happens that one branch of a vine will bear different leaves, or larger or differently shaped or colored fruit from the rest of the vine. In this case a cane may have sported in the direction of producing only staminate or male flowers, and that cane was used in propagating. We should set a new vine or vines, to take the place of this; as the new vines get large enough to produce shade, cut away a part of the old one; in two or three years it can be replaced by other vines, and no perceptible amount of shade be lost, while fruit will be gained.

Corn Cobs.—During the past six months corn cobs and the meal from them have attracted considerable attention. Not many years ago they were thought worthless as an article of food, and are now generally thrown away. Of late a number of analyses of corn cobs have been made, all of which are much in their favor. Prof. Stœckhardt, of Germany, rates the nutritions value of cob meal as high as that of fresh potatoes, and says that it is more digestible than straw. The next question, and the one which as yet does not seem to be answered, is: What is the influence of this meal upon the animal? Does it clog the paunch as claimed by some? The chemistry of cob meal is one thing and the practical feeding value of it, is another; will they both agree in its being an important addition to the list of our feeding stuffs? Any analysis *may* show a nutritive value that the animal's stomach fails to discover. The value to the farmer of cobs, as a feeding stuff, can only be ascertained by accurate experiments in feeding. If any such have been made they should he made public.

Our Field Experiments.—Prof. Atwater writes "In the descriptive pamphlet prepared to go with the Experimental Fertilizers offered by the *American Agriculturist*, I have taken pains to explain about the experiments, and how to make and interpret them. I shall be happy to receive questions and suggestions, and will reply as promptly and fully as my time will allow." Address communications to Prof. W. O. Atwater, Middletown, Ct.—[EDS.]

Toads Eating Bees.—A French observer, M. Brunet, has seen a single toad in his garden catch, and devour, twelve honey bees in rapid succession. Upon moving the toad to some distance from the hives, it returned to its attacks upon the "hot-footed" insects.

Catalogues Received.

SEEDSMEN.

WM. H. CARSON, 125 Chambers Street, New York. Through some oversight this was not acknowledged at the time it was received, though it came among the earliest. It is not too late to say that it is one of the very neatest and fullest, while in the way of novelties it is in the foremost rank.

FRANK FORD, Ravenna, Ohio. Seed Potato list and Alpha Tomato.

AARON LOW, Essex, Mass. A full and illustrated list, with Low's Hybrid Squash and other specialties.

T. J. SIMONSON, 63 Barclay Street. An abridged list of Seeds and Plants.

ROBERT VIETCH & SONS, New Haven, Conn. A full Seed catalogue, to which a large Plant list is appended.

NURSERYMEN.

BAIRD & TUTTLE, Bloomington, Ill. This is the Nursery established by F. K. Phœnix, and appears to be as full as formerly.

R. J. BLACK, Bremen, Ohio. Besides the well known varieties, a remarkable list of New and Rare Apples, Dyehouse Cherry, etc.

GEO. W. CAMPBELL, Delaware, Ohio. Grape Vines, including novelties, other Fruits and Flowers.

R. DOUGLAS & SONS, Waukegan, Ill. A special list of very rare Evergreen Seedlings.

ELLWANGER & BARRY, Rochester, N. Y. Descriptive catalogue of Ornamental Trees, Shrubs, etc., as full and as wonderful in its way as the Fruit list noted last month.

G. H. & J. H. HALE, South Glastonbury, Conn. Small Fruits, Champion Quince, etc.

FARLEY & ANDERSON, Union Springs, N. Y. Fruit and Ornamental Stock. The Duchess Grape a specialty.

A. HANCE & SON, Red Bank, N. J. A full stock in every department, and several specialties.

GEO. S. JOSSELYN, Fredonia, N. Y. Grape Vines and Small Fruits.

JACOB W. MANNING, Reading, Mass. General stock, Evergreens a specialty. Various novelties.

THOMAS MEEHAN, Germantown, Pa. A wonderfully full collection, with many rarities.

E. MOODY & SONS, Lockport, N. Y. Wholesale lists at very low rates.

WILLIAM PARRY, Cinnaminson, N. J. Small Fruits, with several new varieties of Fruit and Ornamental Trees.

J. A. VAUGHN & CO., Carver, Mass. General collection of Fruit and Ornamental Trees.

G. ZIMMERMAN & SON, Buffalo, N. Y. An illustrated catalogue of Fruit and Ornamental stock

FLORISTS.

N. ADMIRAL, Danville, Ill. Greenhouse and Bedding Plants in great variety.

BAIRD & TUTTLE, Bloomington, Ill. A large and full illustrated Plant catalogue.

G. R. CLARK, Scranton, Pa. Besides Greenhouse Plants makes a specialty of Vegetable Plants.

EDWARD GILLETT, Southwick, Mass. Native Perennial Plants, Shrubs, Ferns, etc.

HOOPES BRO. & THOMAS, Westchester, Pa. Although the Greenhouse business is secondary to that of the Nursery, the list is as large as if this were the sole business.

HOVEY & CO., 16 South Market Street, Boston, Mass. Very full, and includes the wonderful new Camellias.

DAVID LITTLE & CO., Plattsburgh, N. Y. A large stock, including novelties.

TYRA MONTGOMERY, Mattoon, Ill. General Greenhouse and special Geranium catalogues.

JOHN SAUL, Washington, D. C. A catalogue of over 120 pages, with the usual share of Rare and New Plants, besides a splendid Rose list.

GEORGE SUCH, South Amboy, N. J. Spring catalogue of Bedding Plants, Gladiolus, etc., as neat in appearance and as rich in contents as its predecessors.

W. B. WOODRUFF, Westfield, N. J., adds to Bedding Plants, Cabbage, Tomato, and others, thus blending the useful with the sweet.

FOREIGN CATALOGUES.

STEELE BROS. & CO., Toronto, Canada. A very full illustrated "Seed Annual."

D. LUCCHETTI & CO., Milan, Italy. Field and Garden Seeds, and Seeds of American Grapes.

FERTILIZERS.

H. J. BAKER & BRO., 215 Pearl Street, N. Y. Forester's Complete Manures.

MATFIELD FERTILIZER CO., 13 Doane Street, Boston, Mass. A treatise on the Matfield Fertilizers, and directions for use.

MICHIGAN SALT ASS'N, Saginaw, Mich. A Treatise on "Salt as a Fertilizer."

LIVE STOCK, POULTRY, ETC.

ARMSTRONG & BOGMAN, Providence, R. I. Pea Comb American Sebrights.

SAM'L CUSHMAN, Pantucket, R. I. White Leghorns.

W. E. FIELD, Richland, N.Y. Poultry, Trout, and Bees.

GEO. S. JOSSELYN, Fredonia, N. Y. Fowls, Ducks, and Geese.

F. B. REDFIELD, Batavia, N. Y. Polled Angus and Short Horn Cattle, and Trotting Horses.

W. L. MALLOW, New Holland, Ohio. Ayrshire Cattle, Berkshire Pigs, Cotswold Sheep and Poultry.

L. C. ROOT & BRO., Mohawk, N. Y. Italian Bees, and all appliances used in Bee-keeping.

MACHINERY AND MISCELLANEOUS.

AMERICAN STEAM APPLIANCE CO., 12 and 15 Park Row, N. Y. Feed Governors, Water Indicators, etc.

BLYMYER MANUFATURING CO., Cincinnati, Ohio. This, the oldest establishment engaged in making Sorghum and Sugar machinery, is ready to meet the renewed activity in Sorghum culture.

BOOMER & BOSCHERT, Syracuse, N. Y. Full descriptions and illustrations of their remarkable Cider and Wine Presses.

H. B. GRIFFING, 70 Cortlandt Street, N. Y. Farm Implements, Fertilizers, Chemicals, etc.

ALLEN GOVERNOR CO., Boston, Mass. Governors for Steam Engines.

A. & F. BROWN, 57, 59, and 61 Lewis Street, N. Y. Hangers, Pulleys, and other machinery.

EUREKA MOWER CO., Towanda, Pa. Mowing machines.

JAS. W. QUEEN & CO., 924 Chestnut St., Philadelphia, Pa. Microscopes, Telescopes, etc.

GEO. W. TAFT, Abbington, Conn. Benefactor Road Scraper.

WM. SELLERS & CO., 79 Liberty Street, N. Y. Shafts, Hangers, Pulleys, and other machinery.

WILLSON & SONS, Columbus, Ohio. Cast-Steel, Spiral Spring Whiffle Trees.

WITHINGTON & COOLEY, Jackson, Mich., make Garden and Farming Tools, and issue a beautiful catalogue.

ADVERTISEMENTS.

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The regular course of lectures commences in October, each year. Circular and information can be had on application to

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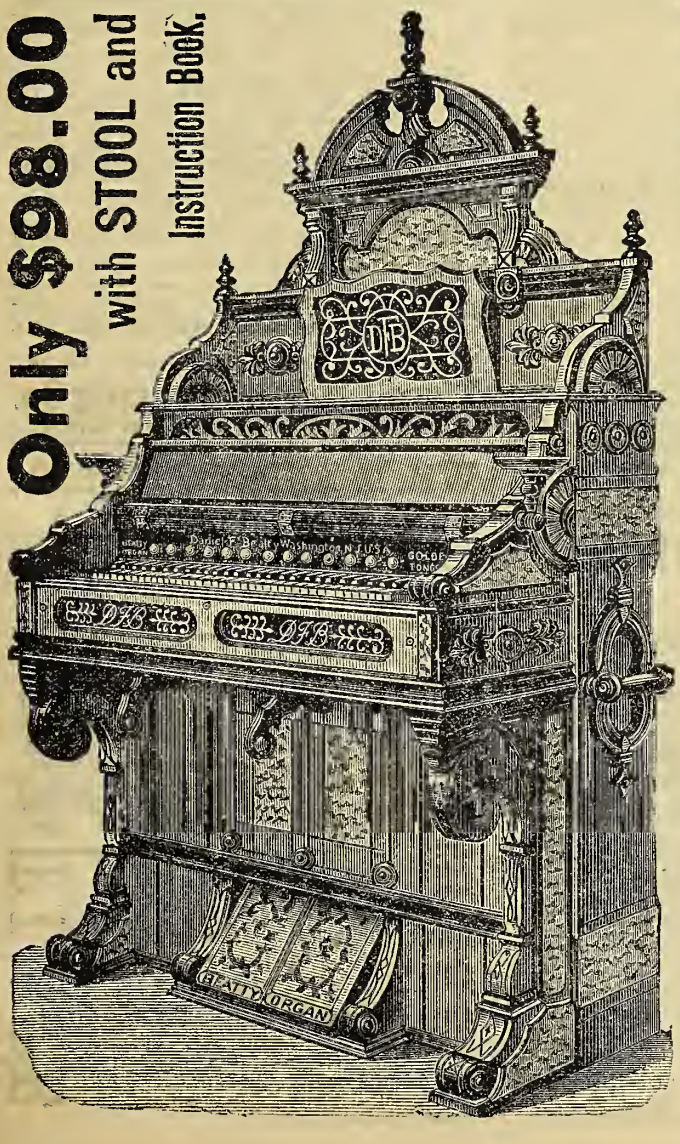

Beatty's Offer for Thirty Days.

This Beautiful Piano Upright Cabinet or Parlor Organ, (like cut) **New Style A, or No. 2400.** Dimensions—Height 5 inches, Depth 24 inches, Length 52 inches. **Three (3) sets of Golden Tongue Reeds, Thirteen (13) stops.** (1.) Violina, (2.) Echo, (3.) Viola, (4.) Diapason, (5.) Melodia Forte, (6.) **VOX CELESTE,** (7.) **GRAND ORGAN,** (8.) Celestina, (9.) Flute Forte, (10.) Melodia, (11.) Flute, (12.) Dulcet, (13.) **VOX HUMANA** or **TREMELO. Five Octaves. Upright Bellows,** with immense power. Lamp Stands at each end. Beatty's Improved Knee Swell, and Beatty's New Excelsior Grand Organ Knee Swell. Magnificent highly finished Black Walnut Case and Elegant French Veneered Panels latest design extension top with beautiful music receptacle. All late improvements. Weight when boxed about 375 lbs. This **Organ contains Beatty's New Vox Celeste Stop, which is by far the sweetest and most perfect that has ever been attained.** Charming! is the universal exclamation of critics and lovers of sweet music who have heard this combination. The sudden burst of harmony thrown out by the Beatty Grand Organ Excelsior Knee Swell, from the scale being performed by a professional, is inimitable: all things considered, this instrument is the finest Cabinet Organ in America. I challenge its equal. Beware of imitation. Buy only the genuine Beatty.

Regular Retail Price asked for such an instrument by the Monopolists' Agents, about $375.00.

I will sell this Beautiful Organ during the next 30 days in order to have it introduced, with a **PLAIN $3 ADJUSTABLE STOOL,** and **Instruction Book thrown in,** (which will be shipped with the instrument) for **ONLY $98.00!**

☞Can be shipped on an Hour's Notice. Please send your order by letter or telegraph. No money required until you are entirely satisfied. Pay for the instrument only after you have fully tested it at your own home. If it is not as represented, return it at my expense, I paying freight both ways. This certainly is a fair offer. Remember that this offer is not good after the 30 days are up, and that I positively will not deviate from this price.

FULLY WARRANTED FOR SIX YEARS!

I want this instrument more generally introduced, hence this unparalleled offer. It is about the actual cost of manufacturing. **ORDER AT ONCE,** as every Organ when introduced in a new locality sells others. My Instruments are first-class and just as represented. **It is a Standing Advertisement.** Hence I can give you a **splendid bargain,** by selling you the first one at about cost. You will do well to accept this offer. At this writing our order No. stands **72,819,** (Seventy-two thousand, eight hundred and nineteen) of **Beatty's Celebrated Pianos and Organs** in actual use throughout the civilized world, and I challenge any one to show one that does not give perfect satisfaction. Sales now very large, constantly increasing at a rapid rate. **The most successful house in America.** More **unsolicited testimonials** than any manufacturer. Send for list of names of persons who are using my instruments everywhere, some may be in your neighborhood, whom you may know. I have extended my sales now over the entire world. **The Sun shines nowhere but it lights my instruments.** Since my return from an extended tour through the Continent of **Europe,** I am more determined than ever that no city, town or village throughout the entire civilized world shall be unrepresented by my celebrated instruments. Beware of Imitations! My great success has brought into existence hundreds of irresponsible imitators. Beware! Buy the best but avoid the monopolists and irresponsible houses.

☞This is the only Establishment in the world that uses the **Celebrated Golden Tongue Reeds!** The greatest invention of the 19th century. Having been **Elected Mayor** of my city by an overwhelming majority is sufficient proof of my popularity at home. **This Advertisement will appear but once,** and nothing can be saved on this instrument by correspondence. **Order now!** If you do not want one yourself, order one and make your friend a handsome present.

☞This is the greatest offer yet made. Illustrated newspaper with much information about cost of Pianos and Organs, sent **free. Show this splendid Offer to your Neighbors.**

ADDRESS ALL ORDERS TO **DANIEL F. BEATTY, Washington, New Jersey.**

Now is the time to order, labor and material are advancing. **NEW PIANOS, WITH STOOL, COVER AND BOOK FROM $210 to $1,600. BEATTY.**

READ WHAT IS SAID OF BEATTY'S ORGANS.

J. L. Everitt, Esq., Cashier National Broadway Bank, New York City, writes: "Organ received. As I am fully satisfied with the instrument, I remit without further delay. I have not thought it necessary to call in experts to test it. All my family are delighted with it."

Send for long list of testimonials from persons from all parts of the world who are using Beatty's Celebrated Pianos and Organs.

☞ **NOW IS THE TIME TO ORDER.** Labor and material are advancing. Prices for Musical Instruments can never be lower. ADDRESS ALL ORDERS TO

DANIEL F. BEATTY, Washington, New Jersey.

$1000, REWARD

For any Washing Machine that will Wash Cleaner, Quicker, with Less Labor and Wear and Tear of Clothes than the

ROBBINS FAMILY WASHER AND BLEACHER, PAT'D OCT. 3, '71.

THE ORIGINAL AND ONLY PERFECT SELF-OPERATING WASHER IN THE WORLD.

No rubbing required. No more yellow clothes nor hard work on washing day. No more rubbing clothes full of holes. Seeing is believing, and if you will try it once, you will never again wash without it, nor use any other washing machine. IT IS THE BEST IN THE WORLD, and will wash anything from a lace curtain to a horse blanket, and can not get out of order.

Good Agents Wanted, both Male and Female, to whom Liberal Inducements are Offered. Agents can make from $10 to $100 per week.

THE ART OF CLEANSING FABRICS,

is yet but imperfectly understood by thousands of good house-keepers. The numerous devices of friction rollers, pounders, squeezers, dashers, agitators, steam wash-boilers, etc., have all failed in one or more of the three essential points, namely: The saving of labor, wear and tear of clothes, or in perfectly extracting the dirt and discoloration; all of which are accomplished by the ROBBINS FAMILY WASHER AND BLEACHER,

WHAT IS IT REMOVES THE DIRT?

You may ask washer-women and house-keepers, and your answer from nine out of ten will be, "Plenty of elbow-grease," or in other words, laborious rubbing upon the wash-board. And such is the case, for you first rub soap upon the cloth, and then you have to *rub it in* to make the dirt soluble; but does that remove it? No; to do that you must dip it in the water and rub repeatedly to *force water* through the fabric, again and again. That is what removes dirt after having been softened by the chemical action of the soap.

The way in which this could be most economically accomplished has been developed in the FAMILY WASHER AND BLEACHER, which embodies all the above points.

Mechanical devices take the entire time of a person during the whole wash, and will not remove streaks from clothes. With the Washer and Bleacher washing, baking, and housework are contemporaneous operations—the fire doing the washing and baking, while the housewife does her housework.

It is harder work to operate these *mechanical devices* than to use the common wash-board. They are constantly getting out of order, and wear out in a short time. They wear out clothes faster than the rubbing-board, because the friction is so much greater.

All who have tried steam wash-boilers will unite with us in saying: They do not give satisfaction.

WE WILL EXPLAIN WHY.

As stated, *water force* is what removes dirt from the fibre of the cloth. A large body of water is required to hold in solution a comparatively small amount of dirt. Steam wash-boilers *cannot* accomplish the desired result. They do not contain enough water to hold the dirt in solution. While steam will not *remove* dirt, it is a powerful agent to *assist* in cleansing, because it expands the fabric, and causes the discharge of dirt and impurities from the cloth that cannot be forced out in any other way, unless by the *application of heat and force of water* combined.

In order to remove the dirt from *steamed* clothes, they must be washed out in water at nearly boiling heat, for if you use water at a lower temperature it causes the fabric to contract, which "sets the dirt," thus causing the clothes to turn yellow. An essential thing to be mentioned is the *rotting* of clothes by *steam wash-boilers*, because of the small *quantity of water* used.

Everybody knows that a large quantity of soap dissolved in a small body of water must necessarily form an *exceedingly strong alkali*, which, after the clothes are *packed* in the steam wash-boiler, is converted into steam, every moment becoming more concentrated till the clothes are removed. A few such washings and what is the result? Simply this: Your clothes fall to pieces of their own weight, and you pronounce *steam wash-boilers* (as they are) *a failure*.

THE PRINCIPLE OF THE WASHER AND BLEACHER embodies all the essential points. First, we have the desired heat which expands the fabric and causes it to discharge the dirt. Second, we obtain a powerful suction beneath the clothes, which produces a rapid *downward current* or *water force*, through and through them, thereby removing the dirt. Third, we use a *large body of water*, which holds the dirt in solution. Fourth, we use but a small quantity of soap. Fifth, the washing is done by water, and *not by steam*. This process cannot injure fabrics. It cleanses thoroughly, *rinsing the clothes* being all that is required to complete the operation.

THE CAPACITY OF THE WASHER AND BLEACHER.

There are two sizes: No. 1, the family size; No. 2, suitable for small hotels, restaurants, and barber-shops, boarding-houses, etc.

The Washer is composed of metal and cannot get out of order.

The family size weighs about 5 lbs., and is only 8 inches long by 5 inches wide, and 1⅜-inch deep.

The discharge pipe is 13 inches high over that, and is 1¼ inch in diameter. It throws water in a solid, unbroken stream, at the rate of 6 to 8 gallons per minute. It will work in any flat bottom boiler. It takes only 3 or 4 ounces of soap in 10 or 12 gallons of water, and will wash bed or table linen, a boiler full in 10 to 15 minutes, wearing apparel in from 10 to 30 minutes, and will remove streaks without rubbing; requires no previous preparation of the clothes, such as soaking over night. Take the clothes dry, and when the Washer gets *thoroughly at work*, fill the boiler as full as it will hold by gently pressing them down with a stick. Use no chemicals, only good soap and soft water. If the water is hard, it may be softened by a small piece of borax, which is harmless.

FOR LACE CURTAINS this Washer is *invaluable*. It cleanses them as no other process can, and without the slightest danger of injury.

No. 2, or small hotel size, is 8¼ in. long, 7⅜ in. wide, 1⅜ in. deep, and weighs about 8 lbs. It will work in a flat bottom boiler holding 15 to 25 gallons, and wash of average pieces from 1,500 to 2,000 per day; or it may be used in any smaller boiler that has a flat bottom large enough for it to rest upon.

For hospitals this Washer is pronounced by the medical faculty invaluable, being the most *powerful disinfector* known; leaving the fabrics pure as when new. By engineers, mechanics, and scientific men generally, it is pronounced one of the most wonderful discoveries in the principle of hydraulics or *water force* ever brought to light. By bleachers and chemists it is said to be the most powerful method of removing dirt and vegetable matter from fabrics ever known. It is the greatest *bleacher* extant and for that alone is worth ten times the price.

THE PHILOSOPHY OF THE WASHER AND BLEACHER IS THIS:

We have 5 lbs. of metal, which attains a much greater degree of heat than the water surrounding it, consequently the water *underneath* the Washer becomes hotter and more expansive than in any other part of the boiler, and is thereby thrown to the surface through the tube; thus tending to produce a vacuum underneath the Washer at the bottom of the boiler, into which the water is rapidly drawn.

As it passes along the channels of the Washer, the curved and contracted throats of which prevent its flowing backward, and being held in contact with the hot metal it becomes hotter and hotter, consequently more expansive and more forcible until thrown to the surface, thus producing a powerful suction beneath the clothes *through which* the water *must pass* in a rapid *downward current*, thereby obtaining a *water force* which cannot be obtained by any other method known in cleansing fabrics. Thus, we get a combination. **FIRST, WE HAVE THE DESIRED HEAT. SECOND, PERFECT CHEMICAL ACTION OF THE SOAP. THIRD, FORCE OF WATER—ALL OF WHICH ARE REQUIRED TO THOROUGHLY CLEANSE AND PURIFY ANY FABRIC.**

THE IMPROVED WASHER,

has a perfect fitting pipe, and is a combination of metals which does not become sticky or dirty. It comes out of the boiler as bright as new.

A WORD ABOUT BLEACHING.

There are few professional bleachers in the United States. The word "bleaching" implies the art of extracting vegetable or animal matter and discoloration from the various fibres which constitute all our different fabrics. This is done by a regular chemical process, consisting, first, of alkaline boilings; second, immersions in solutions of chloride of lime; third, solutions of acids. After each process the goods receive a thorough rinsing in clear water, then last of all processes to thoroughly extract all injurious matter, comes that of *boiling in good soap and water*. This leaves the goods pure and white as snow, ready to finish for the market. Now the question arises, can those fabrics again absorb and *fix* all their natural discolorations? We answer no, impossible. Then why is it (asks the housewife) my clothes become yellow and discolored? There are many reasons—poor soap, hard water, careless servants, not having strength to *rub* out the dirt yourselves, and not being able to use water by hand *hot enough* to keep the fabric expanded to the extent which is absolutely requisite to thoroughly *extract the dirt*, or "bleach the clothes." Clothes should never be *bleached* but once, but *thoroughly washed*, and they will *always be white*. THE FAMILY WASHER AND BLEACHER will do it for you *every time*.

THE INDUCEMENTS WE OFFER.

We want a Local Agent in every town in the United States. We *know* from experience that reliable, energetic men can make money selling the Washer and Bleacher in any community.

We want first-class men as GENERAL AGENTS; men capable of managing one or more counties.

To such we give a duly executed Certificate of Agency.

We furnish descriptive circulars for distribution among families. Also large posters for advertising in public places. Printed directions for using are sent with each Washer.

The retail price of No. 1 WASHER, in New York, is $3.50; No. 2 WASHER, $5.00; No. 1, $24.00 per dozen; No. 2, $36.00 per dozen.

SAMPLE, OR SINGLE WASHERS.

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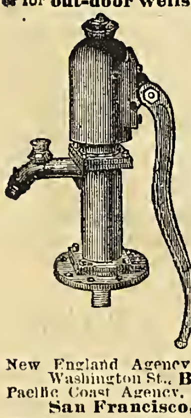

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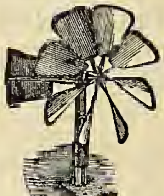

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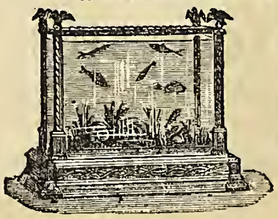

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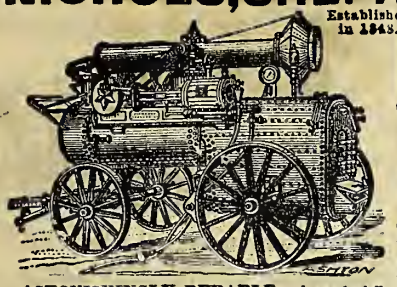

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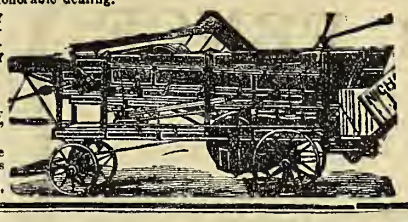

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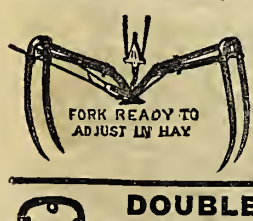

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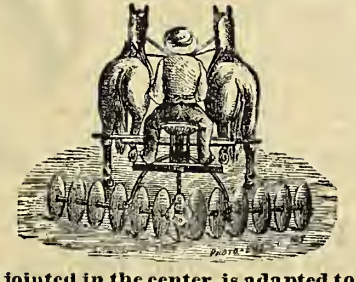

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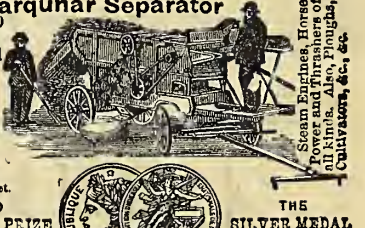

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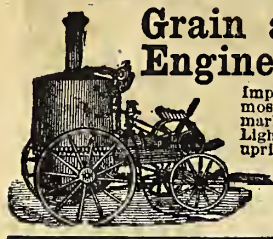

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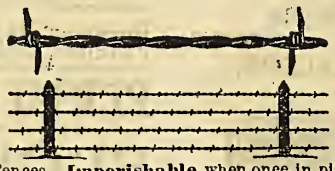

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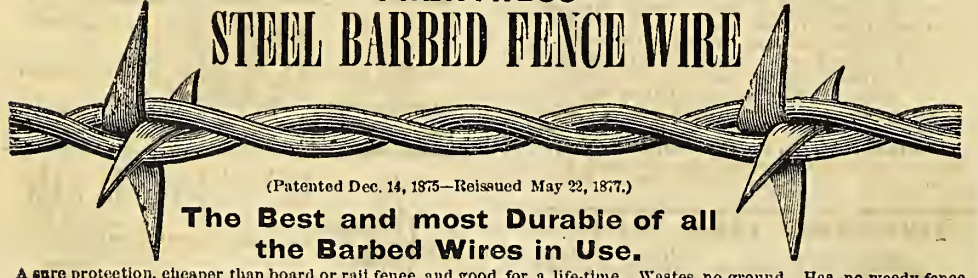

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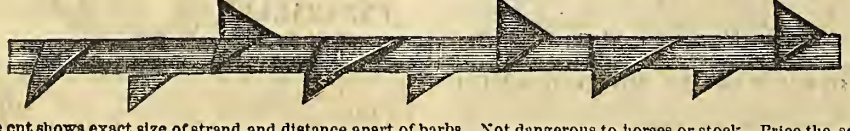

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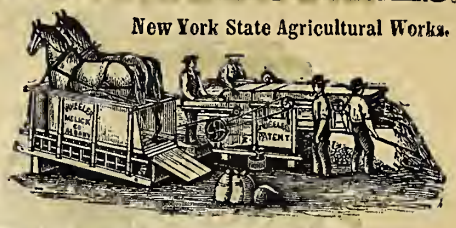

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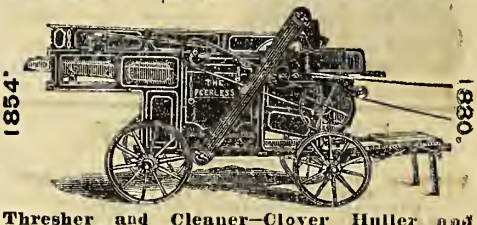

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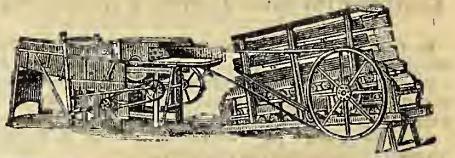

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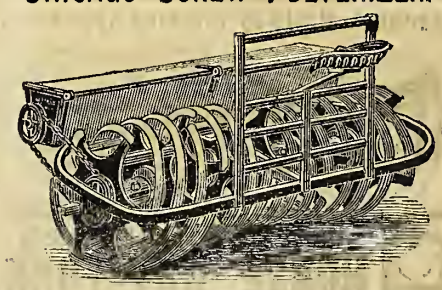

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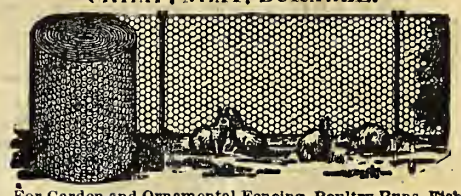

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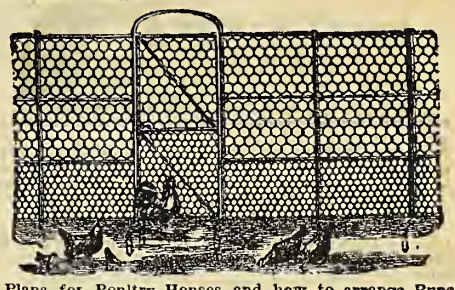

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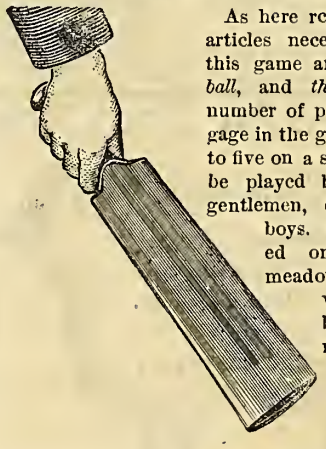

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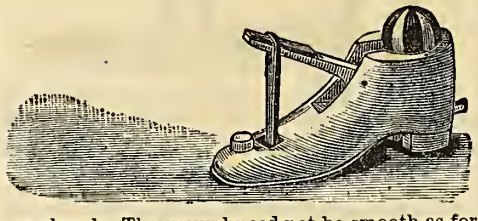

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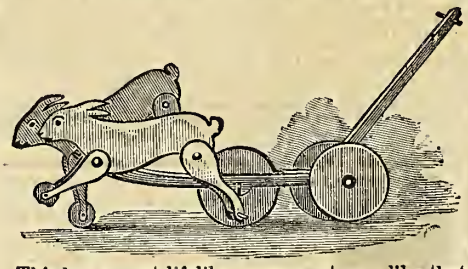

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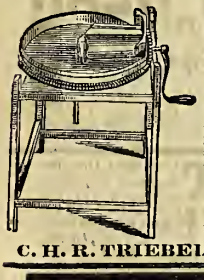

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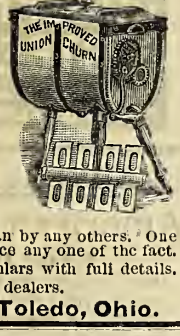

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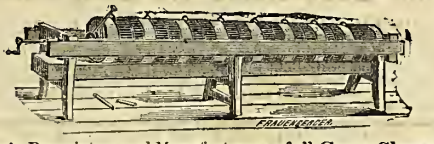

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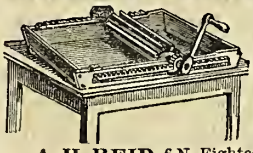

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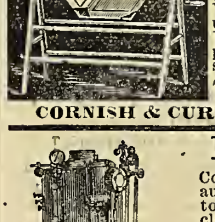

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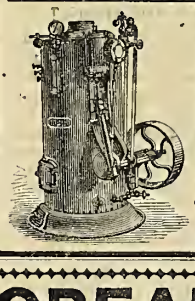

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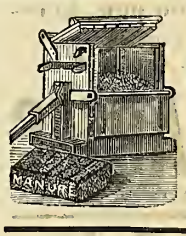

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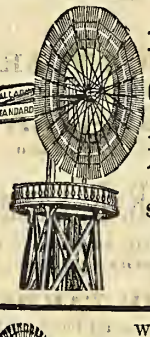

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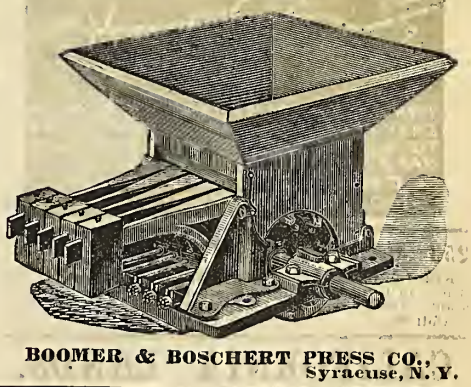

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17,000 Have Already Purchased, and there is yet For Sale by this Company enough Land to make
10,000 EIGHTY-ACRE FARMS!
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Will See a Greater Rush of Settlers to
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MINARD HARDER, Cobleskill, Schoharie Co., N. Y.

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Has a Pad differing from all others, in cup-shape, with Self-Adjusting Ball in center, adapts itself to all positions of the body, while the BALL in the cup PRESSES BACK the INTESTINES JUST AS A PERSON WOULD WITH THE FINGER. With light pressure the Hernia is held securely day and night, and a radical cure certain. It is easy, durable and cheap. Sent by mail. Circulars free. Eggleston Truss Co., Chicago, Ill.,

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ESTABLISHED, 1848.

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AND

WINE MAKING.

BY

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PROFESSOR OF HORTICULTURE IN THE UNIVERSITY OF MISSOURI.

With Contributions from Well-known Grape Growers, giving

A WIDE RANGE OF EXPERIENCE.

ILLUSTRATED.

Professor George Husmann, the author of this volume, is the recognized authority on grape growing and wine making in the United States. His reputation has likewise extended all over Europe. When grape growing met with its disastrous collapse twelve or fifteen years ago, a few bore up under the sad reverses and labored on, hoping for better times. Of this number was Professor Husmann, who had then become prominent in the culture of the grape in that district of which Hermann, Missouri, is the center. Though obliged to give up the vineyards he had established, and to relinquish the publication of the Grape *Culturist*, a most excellent monthly journal, he still continued to prosecute his labors and investigations, which have been fitly recognized, among other ways, by his appointment as Professor of Horticulture in the Missouri State University. His first volume, published some years since, attracted wide attention. He now embodies in the present volume the results of all his labors and investigations down to the present time.

In order to adapt the work to every latitude, the author embodies the methods and opinions of eminent grape cultivators in all parts of the country. Campbell, Bateham, and Kelly (of the famous Kelly's Island), speak for Ohio. Cashin gives Maryland's experience. The author describes the noted vineyards of Crooked Lake, New York. Onderdonk speaks for the pear-line climate of Texas, and in this manner, including some of the most successful growers in California, others than the author, tell their story, each for his own locality.

The work is a complete guide for novices in the culture of the Vine, and at the same time may be regarded as a summing up of everything of importance and value bearing upon this industry. Special attention is devoted to the Phylloxera, whose destruction of the roots of vines had very much to do in bringing on the collapse referred to above, and the destruction of the vineyards of France. The experiments and discoveries of Husmann and his associates in connection with this destructive little insect, are, for the first time, presented in this volume, and will prove of incalculable benefit to the grape growing interests of this and other lands.

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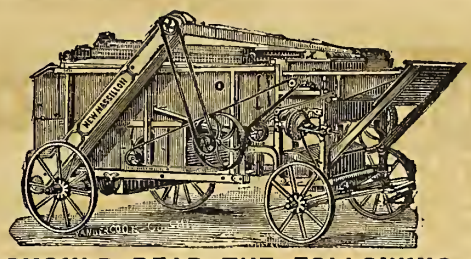
Every  Farmer

SHOULD READ THE FOLLOWING.

WOOSTER, OHIO, Feb. 10, 1880.

RUSSELL & CO., Massillon, Ohio:—

GENTLEMEN:—From various causes, and the bad roads, I did not use the "*NEW MASSILLON*" Thresher purchased from you November 24th, 1879, until to-day.

Having procured the services of Mr. Watson Langell, of Endenburg, with his engine, I started the machine this morning at my barn, one mile from Wooster. Everything went off like a top. Having threshed 40 bushels in accordance with your wishes expressed when I purchased the machine, and for my own satisfaction, as also for the satisfaction of those present, we put the machine to a thorough test, as follows: We removed the stacker and swept the barn floor, then placed the machine so that every particle of straw, chaff, and grain would remain on the floor. We then went to work. I timed the machine and handled all the wheat as it came from the thresher. We ran FIFTEEN (15) MINUTES, and threshed THIRTY-THREE (33) bushels in splendid shape. We next shook off the straw, examining it carefully for unthreshed heads; NOT A KERNEL WAS FOUND IN THE STRAW. After sweeping the floor thoroughly to get every grain, we put all the chaff and refuse through the mill, and obtained barely TWELVE ounces of wheat, careful weight. This contained every grain that fell from the thresher.

A number of threshermen, farmers, and machinists were present, also the agents of two other machines—all agreed that the test was the fairest and most satisfactory they had ever witnessed, and the "*NEW MASSILLON*" the only machine that would thresh with the speed shown, and not throw over grain. I am sorry some of your Company were not present.

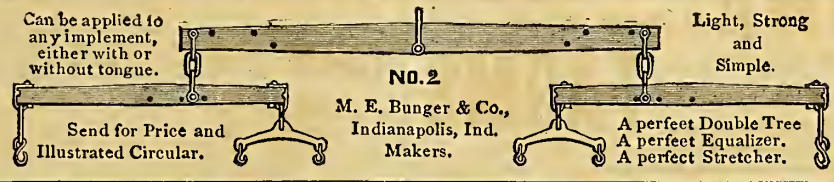
Mr. Langell, the engineer, himself an experienced thresherman, pronounced its general behavior the best, and the power required the lightest, he ever saw in a new machine.

I have no hesitation in saying that no thresher in the world has ever equalled this record. It EQUALS JUST ONE BUSHEL WASTE IN TWENTY-SIX HUNDRED AND FORTY. Yours truly, [Signed] J. H. KAUKE.

All those present at this test have, over their signatures, fully corroborated Mr. Kauke's statement. Mr. Kauke is so well known at home that no evidence would be better than his word. We have, in addition to this letter, an affidavit from him, taken on Feb. 14th, 1880, fully verifying the above facts. The machine used was a No. 6 "*NEW MASSILLON*," 30-inch cylinder, 40-inch table, and was driven by an eight-horse portable engine. It was the last one we had of our 1879 manufacture, and was out of our regular stock, and was in no point changed nor improved. It was run just as it came from the shop. We invite comparison with any test made. This machine was not represented by any party present—was tried solely to prove it.

RUSSELL & CO., Massillon, Ohio.

Can be applied to any implement, either with or without tongue.



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NO. 2

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M. E. Bunger & Co., Indianapolis, Ind. Makers.

A perfect Double Tree
A perfect Equalizer.
A perfect Stretcher.

THE BAKER GUNS.

FIG. 1.

FIG. 2

Three-Barrel GUN.

Two Shot and One Rifle.

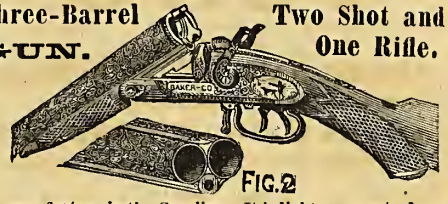

FIG. 2

We make the best double gun in the world for the money—choke-bore, rebounding locks, extension rib. Our $40 gun has the best English twist barrels, and the best material throughout. All guns sent on trial and guaranteed.

Price—Best English Twist Barrels, $40. Damascus steel, $55 to $200. Send stamp for Descriptive Circular.

A new feature in the Gun line. It is light, compact; from 8 to 10 lbs. in weight. The Rifle is perfectly accurate. It has proved a great success for all kinds of shooting. All guns shipped on trial and guaranteed. Price $75 to $250.

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Manufactured by G. T. LEWIS & MENZIES CO., Philadelphia.

CAUTION!—The great popularity of, and increasing demand for our "Automatic" Sewing Machine induces unprincipled agents to deceive customers by claiming, for their old pattern machines, automatic and other features belonging exclusively to us.

THE

"New Automatic"

or "NO TENSION" Silent Sewing Machine

Differs in all essential respects from every other Machine! Only Machine without a Tension, and Bobbin or Shuttle!—Only really Light-Running Machine!—Only Machine with Stitch-Regulator!—Easiest to Work!—Fastest!—Makes Strongest Seam!—Absolutely without Danger to Health!

As it is impossible to convey by advertisement an idea of the unique and wonderful features of this Machine, we solicit **DIRECT CORRESPONDENCE** from all persons owning or about to purchase a Sewing Machine, and will carefully and promptly reply to all communications.

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GRASS and GRAIN CUTTING MACHINES.

AWARDED THE CROWN OF HONORS

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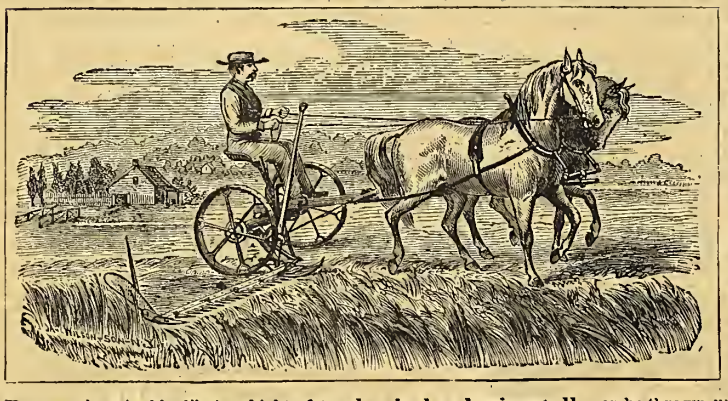
For Lightness of Draft. For Excellence of Construction.
For Superiority of Execution. For Simplicity and Durability.

AND FOR

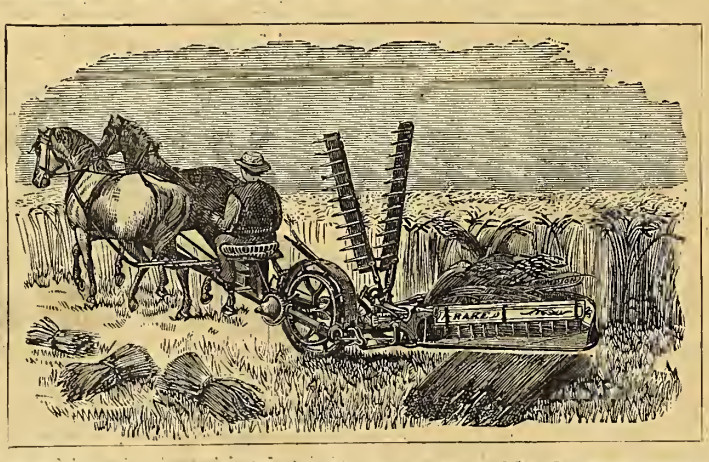
New and Valuable Features never before Combined in Harvesting Machinery.

THE NEW CHAMPION MOWER.



The **new** mechanical device for giving to the knife bar a rapid reciprocating motion, is one of the wonders of modern mechanism, and after years of the severest trial has proved its superiority. It runs without noise, and with extraordinary smoothness and regularity. The entire **power** exerted by the horses is applied **directly** to actuating the knife; hence, while it is the lightest draft, it is the strongest cutting machine in use, as has been repeatedly proven in the mowing of swamp lands, which had never before been mowed, **because no other machine could be found that would do it. The Cutter Bar** may be raised bodily to a hight of **twelve inches horizontally,** or be thrown up at any angle, or to a vertical position, all without throwing the machine out of gear, or stopping the team. The bar may also be folded and secured for leaving the field without the necessity of the driver leaving his seat. The perfect control which the driver has over the bar adapts the machine for use in the worst kind of mowing, **readily clearing trees,** stone heaps, or other obstructions.

THE CHAMPION SINGLE REAPER.



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REMEMBER, *under no circumstances should you buy a Mower or Reaper, until you have seen* **THE CHAMPION.** *When ever you hear of one of these machines in your vicinity, do not fail to examine it thoroughly.*

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AND THE

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BAKING POWDER

Absolutely Pure.

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AMERICAN SUBMERGED PUMP

IS A DOUBLE-ACTING, NON-FREEZING

FORCE-PUMP.

Will draw water from 1 to 100 feet, with one-man power, and also force water to any required distance.
Prices, complete,

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RUBBER HOSE,

For Garden Purposes, at manufacturer's prices.

Wakefield, Perfection, and Peerless

EARTH CLOSETS

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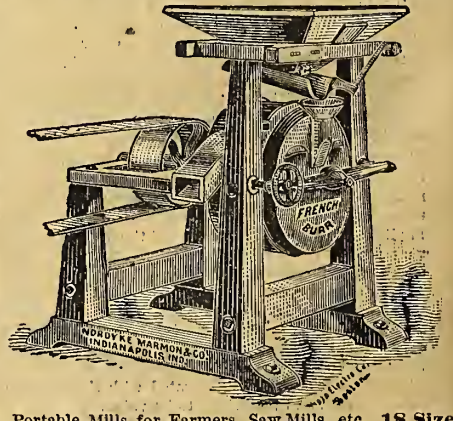
ESTABLISHED 1851.

Grist Mills of French Buhr Stone.



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JUNE, 1880.

AMERICAN AGRICULTURIST.

FOR THE FARM, GARDEN & HOUSEHOLD.

VOL. XXXIX. NUMBER 6.

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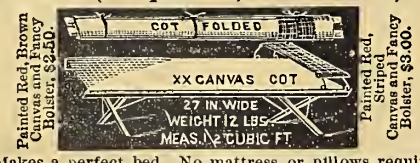

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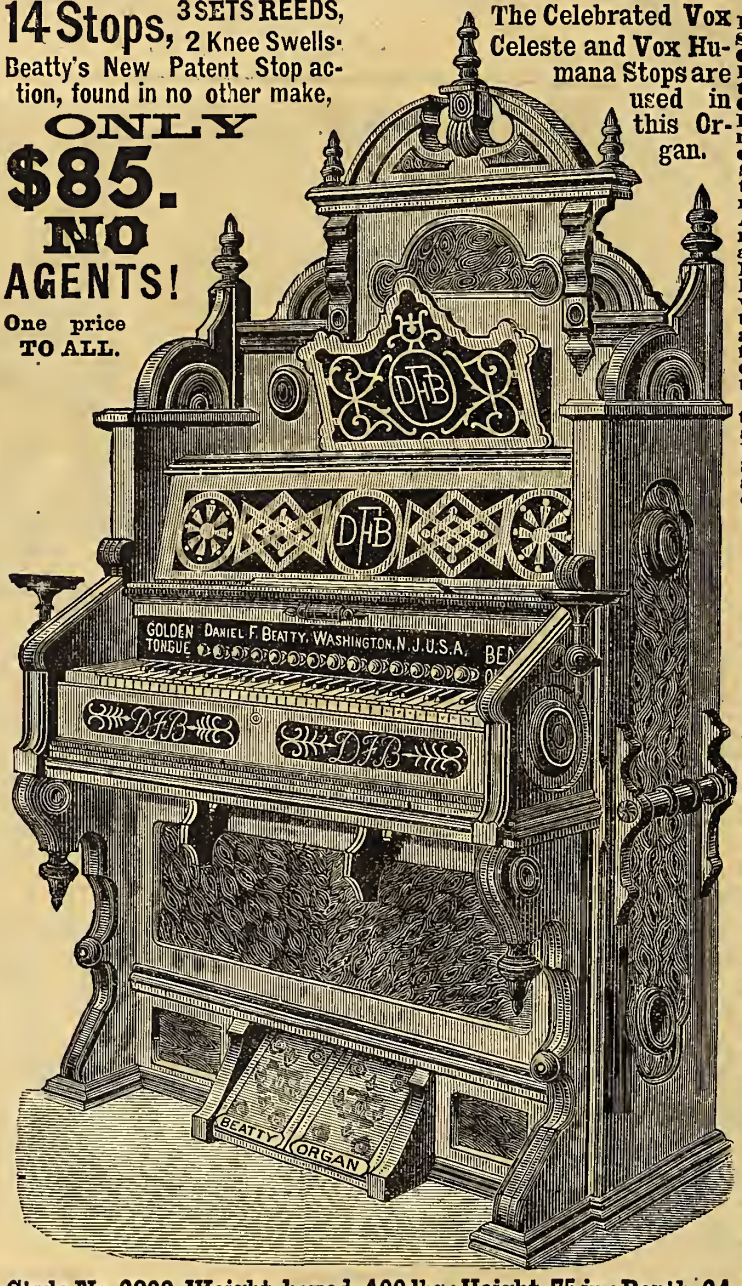

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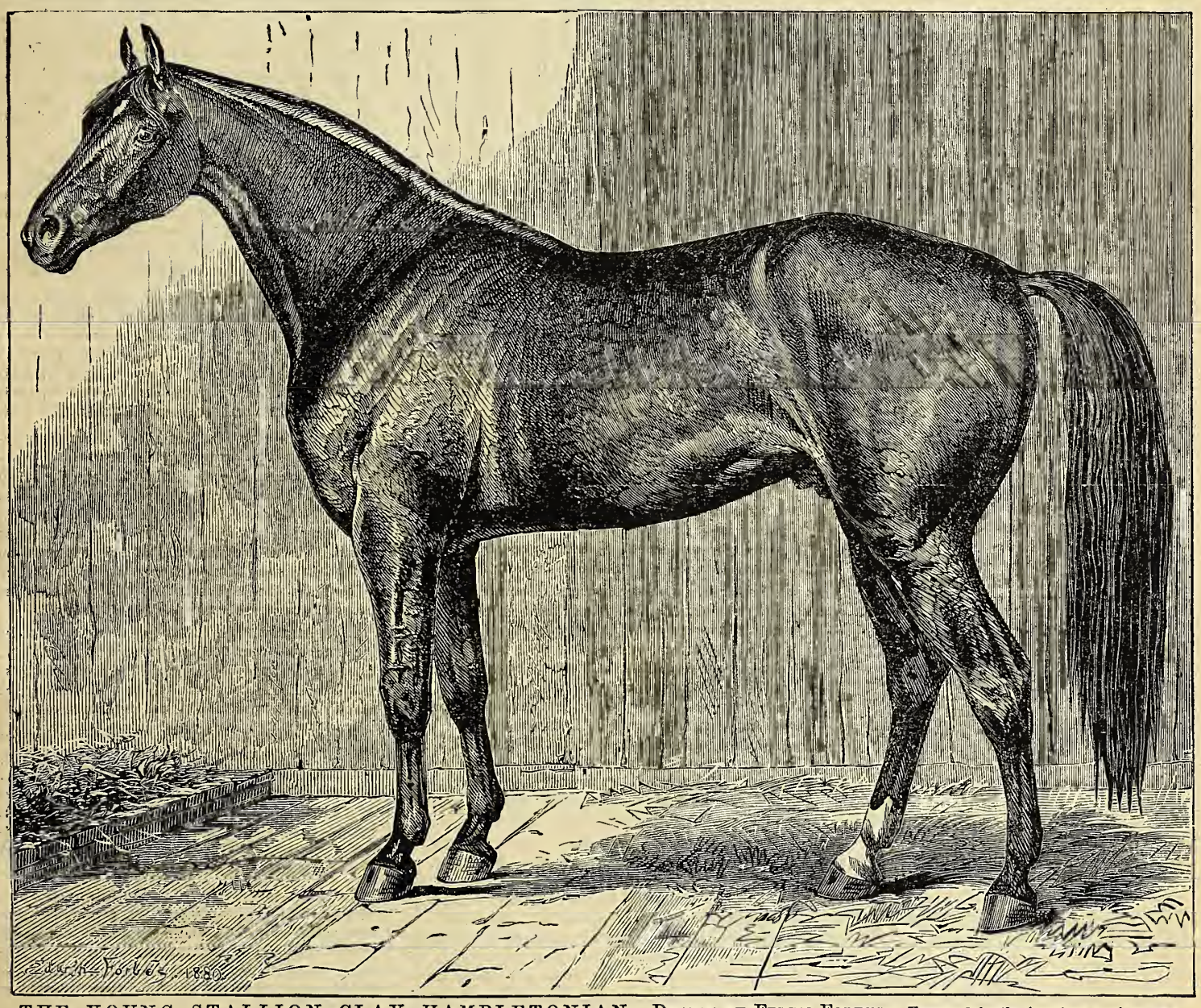

THE YOUNG STALLION CLAY HAMBLETONIAN.—DRAWN BY EDWIN FORBES.—*Engraved for the American Agriculturist.*

The American trotting horse has been produced from a variety of elements that have been blended to secure a high development of what has been termed the "trotting instinct." The most celebrated sires to which the established trotting families trace their origin were, with few exceptions, thorough-bred, or with a large preponderance of thorough-bred blood. With the inherited nervous force of these sires was combined an aptitude for trotting action, that has been intensified by systematic training and selection during the past half century with the most satisfactory results. The first trotting match in America was made in 1818, for a stake of $1,000 against time. It was won by "Boston Blue" in the then unprecedented time of three minutes. Now, the trotters having a technical record of 2.30 and less are numbered by hundreds, while "St. Julien" has made his mile in 2.12¼. Breeders of trotters, although favoring certain strains of blood, have considered the performance of the animal as the test of excellence, and as the best performers have descended from a few favored sires, the blood of these has been mingled to a greater or less extent in many of the celebrities of the day.

In the stallion "Clay Hambletonian," the property of Ira S. Gardner, Johnsons, Orange Co., N.Y., whose portrait is given above, the blood of two prominent families is represented—the Hambletonians and Clays. His sire, "Mapes' Hambletonian," was by "Rysdyk's Hambletonian," the celebrated progenitor of the Hambletonian family, that deservedly stands first in popular favor. His dam, the fast trotting mare, "Nettie Clay," is a daughter of "Sayer's Harry Clay," and her dam traces a lineage through "Highlander" and "Duroc," to imported "Diomed." "Sayer's Harry Clay" was by "Neaves' Clay," he by "Cassius M. Clay," and he by "Henry Clay," who was descended from "Young Bashaw." The dam of "Sayer's Henry Clay" was by "Bellfounder," the noted Norfolk trotter imported in 1822. Until within a few years the Clay family has not been appreciated by breeders of trotters, but the great success of Hambletonian sires with the daughters of "Sayer's Harry Clay," has shown the value of this strain of blood. The Bellfounder blood of the Clays on the side of the dam seems to supplement the dominant Messenger blood of the Hambletonian with its similar Bellfounder cross, giving a perfect trotting form.

"Clay Hambletonian" is thus, as to his breeding, in good company, and although never trained, his form and action indicate that he is capable of a rate of speed that would be creditable to the blood he represents. "Clay Hambletonian" is eight years old, stands 16 hands high, and weighs nearly 1,100 lbs. in his present condition. His color is a rich brown, with a star in his forehead, and one white hind foot. His proportions and general expression are well represented in the engraving; he has good legs and sound hoofs, and moves with a square, even gait. His sloping rumps and strong quarters—characteristic of his maternal blood—are seen to the best advantage when in motion.

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Calendar for June, 1880.

Day of Month.	Day of Week.	*Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon.* Sun rises.	Sun sets.	Mo'n rises.	*N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois.* Sun rises.	Sun sets.	Mo'n rises.	*Washington, Maryland, Virginia, Kentucky, Missouri, and California.* Sun rises.	Sun sets.	Mo'n rises.
		H.M	H.M	H. M.	H.M	H.M	H. M.	H.M	H.M	H. M
1	T	4 25	7 30	0 47	4 31	7 25	0 47	4 36	7 19	0 49
2	W	4 25	7 31	1 11	4 30	7 25	1 13	4 36	7 20	1 15
3	T	4 24	7 31	1 36	4 30	7 26	1 33	4 35	7 20	1 42
4	F	4 24	7 32	2 4	4 30	7 27	2 8	4 35	7 21	2 12
5	S	4 24	7 33	2 35	4 29	7 27	2 40	4 35	7 22	2 46
6	S	4 23	7 34	3 12	4 29	7 28	3 18	4 35	7 22	3 24
7	M	4 23	7 34	sets	4 29	7 29	sets	4 34	7 23	sets
8	T	4 23	7 35	8 27	4 28	7 29	8 22	4 34	7 23	8 16
9	W	4 23	7 35	9 8	4 28	7 30	9 3	4 34	7 24	8 57
10	T	4 23	7 36	9 42	4 28	7 30	9 38	4 34	7 25	9 34
11	F	4 22	7 37	10 12	4 28	7 31	10 9	4 34	7 25	10 6
12	S	4 22	7 37	10 39	4 28	7 31	10 37	4 34	7 25	10 34
13	S	4 22	7 38	11 3	4 28	7 31	11 2	4 34	7 26	11 1
14	M	4 22	7 38	11 27	4 28	7 32	11 27	4 34	7 26	11 27
15	T	4 22	7 38	11 51	4 28	7 33	11 53	4 34	7 27	11 53
16	W	4 22	7 39	morn	4 28	7 33	morn	4 34	7 27	morn
17	T	4 22	7 39	0 18	4 28	7 33	0 20	4 34	7 27	0 24
18	F	4 22	7 39	0 48	4 28	7 34	0 52	4 34	7 28	0 56
19	S	4 23	7 40	1 24	4 28	7 34	1 29	4 34	7 28	1 34
20	S	4 23	7 40	2 9	4 28	7 34	2 15	4 34	7 28	2 21
21	M	4 23	7 40	3 5	4 29	7 35	3 11	4 35	7 29	3 18
22	T	4 23	7 40	rises	4 29	7 35	rises	4 35	7 29	rises
23	W	4 23	7 41	8 48	4 29	7 35	8 44	4 35	7 29	8 40
24	T	4 23	7 41	9 26	4 29	7 35	9 23	4 35	7 29	9 20
25	F	4 24	7 41	9 57	4 30	7 35	9 55	4 36	7 29	9 54
26	S	4 24	7 41	10 25	4 30	7 35	10 24	4 36	7 29	10 23
27	S	4 24	7 41	10 50	4 31	7 35	10 50	4 36	7 29	10 51
28	M	4 25	7 41	11 14	4 31	7 35	11 16	4 37	7 29	11 18
29	T	4 25	7 41	11 39	4 31	7 35	11 42	4 37	7 29	11 45
30	W	4 26	7 41	morn	4 32	7 35	morn	4 38	7 29	morn

PHASES OF THE MOON.

MOON.	BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	D. H. M.	H. M.	H. M.	H. M.	H. M.
New M'n	7 5 11 ev.	4 59 ev.	4 47 ev.	4 35 ev.	4 5 ev.
1st Quart	15 5 7 ev.	4 55 ev.	4 43 ev.	4 31 ev.	4 1 ev.
Full M'n	22 9 2 mo.	8 50 mo.	8 38 mo	8 26 mo.	7 56 mo.
3d Quart.	29 5 13 mo.	5 1 mo.	4 49 mo	4 37 mo.	4 7 mo.

AMERICAN AGRICULTURIST.

NEW YORK, JUNE, 1880.

Hints for the Work of the Month.

[*The Hints and Suggestions in these columns are never copied from previous years, but are freshly prepared for every month, from the latest experience and observations, by practical men in each department.*]

So far as our observation and information extends the prospect for the various farm crops is good, and if average weather is given us until harvest time the farmer may expect a good return for his labor. Any trouble from "over production" is not to be feared as the foreign market is steady and will need all we can produce in the way of grains, meats, etc., to supply it. Emigration to the West is going on to an extent rarely before known, and it is reasonable to expect that there will be a good supply of labor for the present season; and a large area of new land taken up by the new comers and rapidly worked into productive farms.

Corn.—Frequent cultivation is necessary to the destruction of the weeds while they are young. A smoothing harrow may be used while the corn is small, to be followed by the cultivator and hoe, as the plants get larger. The double cultivator with a span of horses, is more economical than the single cultivator and a single horse, as it saves the labor of one man. One great advantage of the corn crop, is the opportunity furnished for thorough tillage, the beneficial influence of which will be felt throughout the whole rotation of crops. The labor expended upon the growing corn, should be charged in part against the crops that are to follow.

Fodder Corn may be sown in drills, 2½ to 3 feet apart, and at intervals of ten days, for several weeks to come. It is not well to sow the seed broadcast, as the plants, to do the best, need to be cultivated while young, and for this purpose, drills are necessary. The smaller varieties are preferable on account of superior fineness of the fodder. The notion that sweet corn is better for corn fodder than the ordinary field sorts, is without foundation. That the grain is sweeter in the former, does not indicate that the stalks are any better.

Swedish Turnips may be sown this month, in drills 30 inches apart. A plenty of seed should be sown, to insure an even stand of plants—2 lbs. per acre is not too much. The land should be well manured, and thoroughly prepared—a fine tilth is especially essential to success on old ground. Thin the plants, when the second leaf appears, to at least 12 to 15 inches apart. Partial or total failure is, in many cases, to be attributed to defective thinning.

Mowing Machines have come to be an indispensable part of the machinery of the farm. It is a serious loss of time and money to get in any large crop of hay without using them. Scythes may be used around fence corners, trees, etc., but in open fields they must give place to the horse mowers, many kinds of which are so near perfection that it is hard to go astray in selecting one.

Haying.—Clover and Timothy should be cut when in full blossom; if allowed to get ripe, the quality of hay is not so good. By beginning early the work need not be hurried. Use the mower after the dew is off in the forenoon. Cut only as much as can be well cared for. It is often remarked that the average quality of hay is not so good as before the introduction of the mowing machines, from the temptation to cut the grass faster than it can be cured.

Hay Tedders are important implements in conjunction with the mower. Frequent stirring of the grass, to give the air access to all parts without burning the surface in the sun, is a great aid in making hay of the best quality. Grass cut in the forenoon, and well stirred with the tedder, may be put into cocks in the afternoon, when it will cure better than if spread over the surface of the meadow.

Hay Caps are excellent things to protect the hay from the damage that showers would otherwise do to the curing hay. They should be made of stout cotton, a yard or yard and a half square, provided with loops at the corners for fastening down with wooden pegs. If well cared for, a set of caps will last many years, and save several times their cost.

Sheep Shearing.—Washing sheep under the present system of buying wool, will perhaps be the prevailing practice. If care is taken to keep the sheep so that the wool will not be filled with dirt, it is better not to wash. Fleeces should be done up with care, nicely rolled and securely tied with light twine. When it is known that a farmer puts up his wool in neat shape without any tags, etc., he will obtain the highest price. Everywhere, but especially here, "honesty is the best policy."

Ticks.—Immediately after shearing, the ticks leave the sheep for the longer wool of the lambs. The lambs thus infested should be dipped in a decoction of tobacco stems, which will destroy the ticks. Several special dips are in the market.

Potatoes.—The Colorado Beetle must be kept in check by a free and judicious use of Paris Green, or the equally efficient and cheaper London Purple. The liquid method of application, using some sort of a sprinkler, is now most generally practised. It must be remembered that these substances are deadly poisons, to be handled with caution and stored in a secure place, or serious results may follow.

Buckwheat may be sown during this month, and may be made a profitable crop, especially upon newly cleaned ground where the mellowing effects of the crop are of importance. The Silver-Hull buckwheat is better than the common variety, the yield being greater, and the flour from it is whiter and of a finer quality than the ordinary sort.

Poultry.—Many chickens are carried off by hawks, rats, etc., unless safe coops are provided, which should be closed at night and not opened until the dew is off the grass in the morning.

Cellars should be ventilated at night and kept closely shut up and dark in the day time. The outer air highly charged with moisture, if allowed to enter the cellar in the day time will deposit much of its moisture upon the cold walls, and the cellar is made more damp instead of dryer by the day ventilation.

Summer-Fallows.—In rare cases it may be well to summer-fallow. The object is mainly to kill off weeds that have become plentiful and are otherwise difficult to destroy, especially on heavy clay soils. There are so many green crops that may be grown to advantage for cleaning the ground, that it seldom pays to keep a field idle for a whole season merely to rid it of weeds. If it is decided to summer-fallow it should be done with thoroughness

that the greatest good may come from the expensive rest that is given to the fallowed land.

Pigs for early fall killing will need a regular and generous feeding of bran and meal slops. A quantity of milk, with a run in the grass, will do them good. A little foreing at the start pays well for pigs that are grown for the early market.

Rubbing Posts.—All who have the comfort of their animals at heart—and, we may add, desire to preserve their fences intact—should provide a few rubbing posts for the animals. The pleasure of seeing them used is pay enough, but there is more.

Salt Boxes are easily made and are very useful. A few boxes in the pasture will be a saving of the salt which is otherwise thrown upon the soil and largely lost. Long flat troughs may be used.

A Horse Fork.—In the hurry of haying, the saving which is made by using a horse fork will more than pay its cost in a few days. As a time and labor-saving machine, a horse fork should be used on every farm of any ordinary size.

Working Horses.—A thorough washing with clean water, not too cold, will greatly aid in keeping the working horses in a good condition ; it removes the accumulated and dried sweat and dirt much better than dry rubbing. The harness should be kept clean and soft that it may not gall the animals. A little powdered aloes rubbed on with the oil will keep away any insects that are likely to infest the harness, and will do no injury to the horse.

Calves should have a good run of grass. The pushing of them without overdoing must be kept in mind. The first year's growth determines in a great measure what shall be the future of the animal.

Notes on Orchard and Garden Work.

Whatever the earlier part of the season may have been, the first of June, take one year with another, finds the vegetation of the orchard and garden equally advanced. The work now is principally caring for the growing crops. The soil should be kept free from weeds and well stirred, especially if the weather is dry. The best time to kill weeds is while they are young, therefore the hoe, cultivator, and especially the rake, should be kept in motion. Clean culture is the only kind that pays, and it can be practised only by keeping ahead of the weeds.

Orchard and Nursery.

In keeping the ground loose and free from weeds, horse-cultivation should be used as much as possible, care being taken to not bruise the bark, break the lower branches, or otherwise injure the trees. The ends of the whiffletrees should be thickly wound with cloth, or provided with leather pads, to prevent their doing damage to the trees.

Orchards.—With newly planted trees it will pay to give a little time in examining their condition. If they are loose or leaning to one side, a minute spent in pressing the soil about them with the foot will often save them. A mulching, if not already given to the young trees, should be provided before the long drouth. Almost any substance that will cover the soil and protect it from the sun will do.

Labels that are sent from the nursery are only to serve until the trees are planted. A permanent record of the position and kind of every tree in the orchard should be made before the nursery labels are lost or obliterated. A small plan can be made and carried in the pocket memorandum book. A plan of such a record was given in the "Notes" of last year (June 1879.) If the labels upon the trees are to be the only method of indicating the varieties, zinc ones cut in long triangular shape, 4 to 6 inches long, may be used. The name is written in lead pencil, and the narrow end coiled loosely around the limb. Such labels made and adjusted with care have been known to last for 25 years.

Grafts set this spring should be looked to ; and if the bud or buds grow too vigorously, pinch back into shape ; in fact a graft should be treated as if it were a young tree. Cut away all shoots that come upon the stock below the graft, that the nourishment may go to the graft. See that the branches of the graft have plenty of room, and the growth is not interfered with by surrounding branches.

Pruning.—June is a good time for pruning. Larger limbs may be cut away now, covering all cuts with varnish, paint, or melted grafting wax.

Thinning Fruit.—The sooner this essential to the production of the best fruit is done the better. It is seldom overdone, and too frequently entirely neglected. Thinning increases the size and improves the quality of the fruit, and with young trees, just starting into bearing, it is a necessity.

Baskets and Crates for marketing should be provided, and let them be distinctly and neatly marked with the address of both shipper and consignee.

Curculio.—Begin as soon as the fruit is set to visit the trees in early morning; the sluggish insects may then be jarred from the trees and caught upon sheets opened beneath to catch them. The Curculios thus caught should be swept into the fire.

Coddling Moth.—The "worms," after leaving the fruit, seek some hiding place to undergo their changes, and bands of cloth or hay, put upon the trunks of the trees, will catch many of them. The bands should be removed once in ten days, and the insects that have gathered beneath them killed.

Tent Caterpillars are best removed in the early morning while they are in their nests, and the dew glistening upon the web. A pole and swab may be used. The Wild Cherry is such a favorite of the Tent Caterpillar that it is hardly worth the while to keep any such harbors for it near the orchards.

Pear Slugs when so numerous as to do injury, may be destroyed by dusting the leaves with lime or ashes ; even dry earth may be used with good effect.

The Borers of the peach and apple trees are to be looked to. When once in the tree there is no surface remedy. Heaping earth around the base of the tree, or using a close-fitting paper band will keep the female insect from depositing her eggs. For killing the worms the use of the knife and wire probe is the most effectual. Their whereabouts is known by the sawdust they make, and depression of the bark. Use the knife cautiously.

The Fruit Garden.

Currants and Gooseberries.—A mulch should be applied early in the season ; litter from the barn-yard, or "chip-dirt" from the wood-yard may be used. For the "worms" use White Hellebore, a tablespoonful of the dry powder to a pailful of water, the Hellebore being first sealded before going into the pail—apply with a syringe or Fountain Pump, repeating the application in a few days, and continue until the worms are all killed. If shoots start on the bushes where they are not wanted, they should be removed, thus saving much pruning in the fall, and the remaining growth is strengthened thereby. The fruit is frequently sold with greatest profit while green, especially is this the case with gooseberries. For making jelly pick the fruit when fully colored, but before it is "dead ripe."

Raspberries.—The green shoots that are growing now are the ones to bear the next year's fruit, the fruiting ones this season dying after the berries have ripened. When the growing shoots reach 4 feet they should be pinched off. Those not required for next year are to be treated as weeds. The old canes are to be cut away after fruiting.

Blackberries need much the same treatment as their near neighbors, the raspberries. The young canes are allowed a little longer growth, and should be pinched at 5 or 6 feet—all not needed are to be removed. Both the young and old canes should be kept upright by using stakes or trellises.

Grape-vines one-year old set this spring should grow only one shoot; let it be the strongest and best one put forth. Older vines recently set should not be allowed to bear this year. The young growing shoots of old vines should be tied up before they fall over or are broken by the winds ; soft cotton twine or bast bark are the best for the purpose.

Strawberries.—A mulch of straw, cut hay, or leaves, should be applied before the fruit begins to ripen, that the berries may be kept from the soil. The picking and packing for market requires much care and good judgment. All over-ripe berries should be excluded, as one such will be crushed and spoil the whole basket. The treatment of the bed after fruiting depends upon the method of cultivation. In any case the mulch is to be removed and the soil forked over. When the plants are kept in hills, the runners are to be cut as fast as they appear. In the alternate system they are allowed to take root between the rows, and the old plants are removed later in the season. Runners struck in small pots of soil will be ready to plant out in August, and will give a good crop next year. Layer the earliest and strongest runners for this purpose.

Kitchen and Market Garden.

This is the time when the rake and the hoe count for so much in the success of the season's work. The weeds must be kept down, or much of the labor of preparation and planting is lost. It is observed that the rake is put before the hoe, and it should be so in the garden. A frequent use of a long and sharp-toothed steel-rake will save much hard hoeing, and at the same time keep the soil in a better condition for the young growing plants.

Sowing for Succession is a useful method of prolonging the season of many vegetables, and should be more generally practised. By sowing beans, peas, corn, etc., at intervals of a week or so, these valuable vegetables may be had through the season.

Asparagus.—After peas have come the plants should be allowed to grow up in order that the green foliage may accumulate food for next spring's early growth. A coating of manure may be added. Keep all large weeds out ; the small ones will not grow after the ground is densely shaded by foliage.

Beans.—If the weather has been cold and backward, and injured the Limas, put in more at once. These and other pole beans need attention to make them all take to the poles. Sow Bush sorts, as the "Refugee" for succession and pickling.

Beets and Carrots.—Sow the main crop if not done already. Keep the weeds out and the soil loose. A succession of the "Egyptian" to use while young should be sown, using the thinnings for greens.

Cabbage and Cauliflower need frequent hoeing. Plants for late sorts in seed-beds should not be too crowded ; they need weeding frequently, and if infested with the cabbage worm, sprinkle with ashes. For Notes on the Cabbage Worm see page 228.

Cucumbers.—For pickles, sow until the middle of the month. Drills are preferred, 5 to 7 feet apart. The ground should be well manured, by plowing furrows, and putting it in, and covering with an inch or so of soil. From 12 to 20 seeds per foot in the rows, gives a fair share for the striped bug, which is quite certain to give them a call. So soon as plants appear, dust with ashes or fine lime, and when well started, thin to three feet apart.

Corn.—Plant at frequent intervals. A top-dressing of guano is excellent. Hoe often.

Celery.—If the plants in the seed-bed get too large, cut off their tops, thus making them stocky.

Egg Plants are the last things to go out : they do but little before hot weather comes, and if put out too soon, get stunted by cold nights. Set out the plants in rich, warm soil. Abundance of manure and care are needed for good success.

Lettuce.—It is of little use to plant lettuce at this season, as it quickly runs up and goes to seed.

Onions need frequent weeding. For near market, half-grown onions put up in small bunches, are more profitable than when left to ripen.

Parsnips and Salsify should be thinned to 5 inches in the row, and hoed frequently, that the weeds may not get a start.

Peas.—Sow for succession, until the hot weather of summer comes, after which they do not pay.

Peppers.—Set out in a warm well-manured place.

Rhubarb.—The flower stalks should be kept cut off. Do not gather the leaf-stalks too late in the season, as it exhausts the plant.

Squashes.—The winter sorts should be planted now. Much care is needed to keep the young vines free from insects. Paris Green may be used ; hand-picking takes time, but is effectual.

Tomatoes should always have some sort of support. A form of Trellis, with a treatment of the subject, is given on page 235. The large green worm that makes such quick destructive work with the vines, must be removed by hand-picking.

Flower Garden and Lawn.

Planting is mostly over, and the care of the lawn, walks, and beds of plants, comprises most of the work. It is to be remembered that a small place neatly kept, is more satisfactory than a large neglected one. Do not attempt to do too much.

The Lawn.—In order to have a fine velvety turf, the mower must be frequently used; at least once a week. In the corners, and under trees where the mower cannot go, a sickle must be used. A neat lawn is the leading feature of a well-kept place.

Walks and Drives should be kept clear from weeds, by occasional surface hoeing and raking. Keep the center higher than the edges, and roll to make hard and smooth. Trim the margins.

Bedding Plants should be in their places. Ornamental designs entail much labor. The plants must be kept of a certain hight by pinching and cutting, that the lines may be distinct, otherwise the intended effect of the design is lost.

Climbers need supports, and those not disposed to cling should be tied to the trellis or other object.

Cannas do best started in the greenhouse, and then planted in the open ground in settled weather.

Spring Bulbs, Hyacinths, Tulips, etc., should make a good growth of leaves, after which they may be taken up and put under cover until dry, then stored in a cool place.

Annuals.—Set out the tender sorts started under glass, and sow seeds for succession.

Perennials.—Cut away the flower clusters so soon as they fade, unless seed is desired from them.

Greenhouse and Window Plants.

A stripping of the greenhouse at this season is not necessary. Many plants do better kept in, while others may be provided for a summer display of bloom. Gesnerias and their relatives are excellent for producing a fine show of in-door flowers, as are the showy Pelargoniums. A plenty of air, water, and shade from the hot sun will be necessary. Make all the repairs that the house needs.

Window Boxes, aside from their place at the window, may be used for decorating the porch or piazza. They must not be allowed to get dry. The plants in the windows with shade in the heat of the day and water may be kept looking fresh.

Commercial Matters—Market Prices.

Money has heen quite active for this season of the year; partly under the manipulation of speculators. Stocks have heen less freely dealt in, and, especially toward the close, have heen unsettled, and generally weaker....Real Estate has shown increasing animation in the dealings, and a hardening tendency as to values....Merchandise has attracted much less attention, notably in tho Dry Goods, Boots and Shoes, Hardware, Drugs, Dyes, Fruit, Skins, and Leather. Hides ruled dull and heavy most of the month under review, but leave off more firmly, with a hetter demand noted. Naval Stores and Petroleum favored huyers, on a tame market....Cotton declined sharply, and met with a comparatively slow sale in the option line, though in fair request for prompt delivery for export....Wool tended to weakness, as to values, on more liberal offerings, and a very moderate call for supplies, especially from the manufacturing interest. The favorable advices from the public sales at London were of little advantage to holders....Breadstuffs have been moderately active, and very variable as to price—Wheat and Corn falling severely under a pressure to realize; Flour also declining, while Rye, Oats, and Rye Flour were advanced. Toward the close, Wheat rallied sharply, influenced, in part, hy a more urgent export inquiry, chiefly for winter grades for the Continent. Corn showed rather more steadiness. Oats left off heavily at reduced figures. Rye also yielded slightly. Supplies of Breadstuffs here had been cut down materially, prior to the arrivals from the Erie Canal, the first tow of boats from which source reached here on Thursday, May 6, adding considerably to the stock of Grain available. Extensive purchases of Corn have heen made for shipment at the modified quotations. Spring Wheat Flour closed firmly; while Winter Wheat product closed in favor of buyers. Unusual activity has been reported in Oats, through the month, largely on speculative account....Provisions have been less freely dealt in, even in the option line, and have ruled lower, leaving off irregularly.

The visible supplies of Wheat—embracing the hoards at lake ports, in transit, and on the seaboard—at latest dates, embraced about 22,183,000 bushels,—of Corn, 12,155,500 hushels; of Rye, 545,000 bushels; of Barley, 1,351,000 hushels, and of Oats, 2,105,000 hushels, against on January 31, an aggregate of 30,100,000 bushels Wheat, 13,100,000 bushels Corn, 979,000 bushels Rye, 4,155,000 bushels Barley, and 3,080,000 hushels Oats. Ocean Grain freights have shown only a moderate degree of animation at much lower and irregular figures, but closed rather more steadily, including by steam to Liverpool, 4½*d.* per bushel; to Bristol, by steam, to 5½*d.* per hushel; to Antwerp, hy steam, to 7¾@8*d.* per bushel, and by sail to Cork, for orders for vessels of average carrying capacity—say 3,000 to 4,000 qrs.—4*s.* 9*d.*@5*s.* per quarter of 480 lbs.

Current Wholesale Prices.

	Apr. 12.	May 10.
Flour—Super to Extra State	$3 90 @ 5 40	$3 65 @ 5 25
" Super to Extra South'n.	3 90 @ 8 00	3 75 @ 7 50
" Extra Genesee	5 40 @ 6 75	5 25 @ 6 50
" Superfine Western	3 90 @ 4 75	3 65 @ 4 80
" Extra Western	4 85 @ 8 75	4 35 @ 8 50
" " Minnesota	4 85 @ 8 50	4 75 @ 8 50
Rye Flour, Superfine	4 50 @ 5 10	4 65 @ 5 25
Corn-Meal	2 50 @ 3 20	2 50 @ 3 20
Corn-Flour, per bbl	3 75 @ 4 25	3 25 @ 3 90
Oat Meal, ℔ bbl	4 50 @ 6 75	4 25 @ 6 50
Wheat—All kinds of White.	1 30 @ 1 36½	1 20 @ 1 26
" Red and Amber	1 15 @ 1 40	1 00 @ 1 30
" Spring	1 10 @ 1 32	1 00 @ 1 26
Corn—Yellow	55 @ 57	52 @ 56
" White	56 @ 58	51 @ 56
" Mixed	53½@ 55	50 @ 53
Oats	41 @ 49	40 @ 50
Rye	87 @ 92	90 @ 92
Barley	55 @ 1 06	55 @ 1 00
Hay—Bale, ℔ 100 lbs	65 @ 90	70 @ 1 00
Straw, ℔ 100 lbs	45 @ 1 00	50 @ 1 05
Cotton—Middlings, ℔ lb	12¾@ 13⅛	11¾@ 11⅞
Hops—Crop of 1879, ℔ lb	27 @ 40	27 @ 40
" " 1878, ℔ lb	7 @ 18	7 @ 18
" olds, ℔ lb	4 @ 12	4 @ 12
Feathers—Live Geese, ℔ lb	40 @ 55	40 @ 55
Seed—Clover, West. & St. ℔ lb	5½@ 7¾	5¼@ 7¾
" Timothy, ℔ bushel	2 75 @ 3 00	2 40 @ 2 65
" Flax, ℔ bushel	1 75 @ 1 80	1 40 @ 1 60
Tobacco, Kentucky, &c., ℔ lb.	3 @ 14	3 @ 14
" Seed Leaf, ℔ lb	6 @ 40	6 @ 40
Wool—Domestic Fleece, ℔ lb	32 @ 60	30 @ 58
" Domestic, pulled, ℔ lb	20 @ 57	20 @ 56
" California	18 @ 45	17 @ 42
Tallow, ℔ lb	6⅛@ 6¼	6 @ 6⅛
Oil-Cake—℔ ton	29 00 @30 25	— @32 00
Pork—Mess, ℔ barrel	11 50 @11 65	10 50 @10 90
" Extra Prime, ℔ barrel	— @ —	9 50 @10 00
Beef—Extra mess	11 00 @12 00	10 50 @11 00
Lard, in trcs. & bbls, ℔ 100 lb	7 50 @ 7 90	7 15 @ 7 65
Butter—State, ℔ lb	20 @ 33	14 @ 25
" Western, poor to f'cy, lb.	11 @ 31	9 @ 25
Cheese	9 @ 14½	8 @ 13½
Eggs—Fresh, ℔ dozen	9½@ 12½	9 @ 12½
Poultry—Fowls, ℔ lb	5 @ 13	6 @ 14
" Chickens, ℔ lb	7 @ 22	14 @ 35
" " ℔ pair	— @ —	40 @ 1 00
" Roosters, ℔ lb	4 @ 5	— @ —
Capons, ℔ lb	16 @ 22	20 @ 26
Turkeys—℔ lb	10 @ 15	9 @ 13
Geese, ℔ pair	75 @ 1 50	1 00 @ 1 50
Geese, ℔ lb	10 @ 12	10 @ 13
Ducks, ℔ pair	50 @ 80	50 @ 80
" ℔ lb	10 @ 16	10 @ 18
Ducks, Wild, ℔ pair	25 @ 2 00	— @ —
Plover, ℔ doz	— @ —	1 50 @ 2 00
Pigeons, ℔ dozen	1 05 @ 3 75	50 @ 2 75
Snipe, per doz	1 00 @ 1 25	50 @ 2 25
Apples, ℔ barrel	2 00 @ 4 50	2 50 @ 5 00
Strawberries, new So., ℔ qt.	15 @ 30	10 @ 25
Potatoes, new, per bbl	4 00 @ 8 00	3 50 @ 5 50
" ℔ bbl	1 00 @ 2 00	1 25 @ 1 75
" Sweet, lb bbl	3 00 @ 3 50	2 50 @ 3 25
Tomatoes, new, per box	50 @ 1 00	50 @ 90
Turnips ℔ bbl	62 @ 75	75 @ 1 25
Beans—℔ bushel	1 30 @ 2 00	1 25 @ 1 75
Peas—Canada, in bond, ℔ bu	— @ —	— @ 81½
" new, green, ℔ bag	— @ 1 80	— @ —
" new, South'n, per bbl	— @ —	1 50 @ 3 50
String Beans, new, p. crate	2 00 @ 3 00	75 @ 2 00
Carrots, ℔ bbl	1 00 @ 1 50	1 25 @ 1 75
Beets, ℔ 100 bunches	1 25 @ 1 75	— @ —
" new, per crate	— @ 1 50	1 75 @ 2 00
Cabbages—℔ 100	5 00 @10 00	— @ —
" new, ℔ bbl	3 00 @ 3 50	1 00 @ 3 25
Onions—℔ bbl	2 75 @ 6 00	3 50 @ 4 50
Cranberries, per crate	3 50 @ 4 00	— @ —
Squash, ℔ bbl	1 50 @ 2 75	1 50 @ 1 75
Spinach, ℔ bbl	1 00 @ 2 50	1 25 @ 1 75
Asparagus, new, ℔ doz. bun	5 00 @ 9 00	75 @ 2 50
Radishes, new ℔ 100 bun	50 @ 1 25	50 @ 1 50
Cucumbers, ℔ 100	2 00 @ 6 00	75 @ 1 50

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist,* from our record kept daily during the year, show at a glance the transactions *for the month ending May 10th,* 1880, and for the corresponding period last year:

1. Transactions at the New York Markets.

Receipts.*	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
23 d's *this* m'th	345,600	2,214,000	3,210,000	76,000	301,000	881,000
23 d's *last* m'th	374,000	1,556,000	2,579,000	69,000	272,000	935,000

* First arrivals from Canal, this year, May 6th.

Sales.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
23 d's *this* m'th	326,000	24,856,000*	6,983,000*	207,000	292,000	2,458,000*
23 d's *last* m'th	338,000	23,571,000*	6,104,000*	181,000	383,000	1,948,000*

* Including sales for forward delivery.

2. *Comparison with same period at this time last year*

Receipts.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
23 days 1880	345,600	2,214,000	3,210,000	76,000	301,000	881,000
26 days 1879	391,000	3,769,000	2,441,000	297,000	351,000	938,000

Sales.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
23 days 1880	326,000	24,856,000	6,983,000	207,000	301,000	881,000
26 days 1879	441,000	8,504,000	5,763,000	474,000	382,000	1,307,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	Corn. bush.	Rye. bush.	Barley. bush.	Oats. bush.	Malt. bush
May 4, 1880	2,140,170	328,739	33,755	86,572	141,537	188,754
May 4, 1879	1,935,402	1,036,039	372,867	232,646	451,492	81,336
May 7, 1878	743,196	263,020	75,229	207,576	570,298	258,827

4. *Exports from New York, Jan. 1 to May 6.*

	Flour. bbls.	Wheat. bush.	Corn. bush.	Rye. bush.	Barley. bush.	Oats. bush.	Peas. bush.
'80.	1,268,500	14,964,000	11,924,000	671,400	255,000	68,000	176,000
'79.	1,056,171	14,460,284	9,937,264	1,154,809	86,290	176,388	150,155
'78.	904,902	14,932,093	6,690,781	1,340,395	1,355,407	223,827	212,106
'77.	436,097	3,124,698	7,062,226	439,605	123,083	60,141	136,874
'76.	728,579	7,614,910	4,336,520	102,604	—	75,290	319,539

New York Live-Stock Markets.

RECEIPTS.

Week ending	Beeves.	Cows.	Calves.	Sheep.	Swine.
Apr. 12	11,664	46	2,584	23,332	36,145
Apr. 19	13,477	76	4,120	24,516	38,830
Apr. 26	13,836	77	5,040	28,164	35,217
May 3	17,151	101	6,140	31,325	34,097
May 10	11,297	44	5,615	25,287	38,636
Total for 5 *Weeks*	67,425	344	23,499	132,524	182,925
do. *for prev.* 4 *Weeks*	50,366	724	7,895	105,935	126,373

	Beeves.	Cows.	Calves.	Sheep.	Swine.
Average per Week	13,485	69	4,700	26,505	36,585
do. do. *last Month*	12,591	181	1,974	26,481	31,593
do. do. *prev's Month*	10,442	208	956	23,369	31,187

Prices for beeves the past five weeks were as follows:

Week ending	Range.	Larger Sales.	Aver.
Apr. 12	7 @11 c.	8¾@ 9½c.	9⅛c.
Apr. 19	7½@11 c.	9 @10 c.	9½c.
Apr. 26	7 @11 c.	9 @10 c.	9¼c.
May 3	6 @10¾c.	9¼@10 c.	9⅜c.
May 10	8½@10½c.	9 @10 c.	9⅜c.

Beeves.—There has been a gradual increase in the receipts during the past five weeks. The week ending May 3, was remarkable in the Live Stock Trade in New York, the receipts of beeves rising to the unprecedented number of 17,151, or 2,911 more than were ever before received in a single week. The foreign shipments are very large. As the warm weather comes on, the market will be less satisfactory, and the prices somewhat lower. The quality of beef offered in the market, has been of good quality. A few poor steers brought only 8c; but most sold for 9@10; Choice lots to dress 56 pounds, from Kentucky, reached 11c.... **Milch Cows.**—There was also a gradual increase in the number of cows sold in the market, though the receipts were very limited. Market very quiet, and prices about the same as last month, namely, $25 to $40 per head for common cows, and $45 to $55, for those of prime order..... **Calves.**—The month opened with a good demand for live calves, which sold readily at an advanced price. Soon the receipts grew heavy, and the price fell gradually, until the close of the mouth. Buttermilk calves, and mixed lots, sold at 4@4¾c., and common to choice Veals, at 4½@6c. Extra lots, hrought $6.25@$6.35 per hundred pounds..... **Sheep and Lambs.**—There was a considerable increase in the number of sheep and lambs received in the New York market, for the month ending May 10. At the close, the market was quite unsatisfactory. Clipped sheep at 4⅝@5½c., with a few extra at 5⅝c., clipped yearlings 8@8¾c., unshorn sheep 6½@7⅝c. Southern spring lambs hrought 7½@8½c., State do., 7¼@9c..... **Hogs.**—There has heen a falling off in the receipts of hogs, with the market dull, at $4.50 per hundred.

The Horse Market has been active all through the month. The demand for driving and coach animals is extraordinary, not only for use in cities at home, but for shipment to European markets. The prices for such animals range from $300 to $500 per head. Street car horses are selling at $115@$130, hut at the close of this month the wants of the car companies will be largely supplied, and the market for these horses will weaken. The demand for fine carriage horses continues, and many more could be sold if they were in the market. Well trained stylish horses sell readily at $300@$350 per head.

Prices of Feed.

Cotton-seed meal	per ton.	$30.00
Linseed-cake meal	"	37.50
Middlings	"	24.00
Bran	"	23.00
Corn-meal	"	23.00

Prices of Fertilizers.

Nitrate of Potash (95 per cent.), per lb.	8 @8½c.
Sulphate of Potash (potash 44 per cent) per lb.	3½@4 c.
do. do. (potash 27½ per cent) per lb.	1½@1¾c.
German Potash Salts (potash 12 to 15 p.c.) p. ton.	$16.00@18.00
Muriate of Potash (potash 50 per cent), per lb.	2 @2¼c.
Nitrate of Soda, per lb.	5@5¼c.
Sulphate of Ammonia (25 per cent.), per lb.	4¼c.@4½c.
Dried Blood (ammonia 13 per cent) per ton.	$40.00@45.00
No. 1. Peruv. Guano 9 p. ct. ammonia, standard, ℔ ton.	$55.00
do. do. Lobos, do. do. do.	46.00
do. do. guaranteed, ℔ ton, cargo K	56.00
Soluble Pacific Guano, ℔ ton	45.00
Excelsior Fertilizer Works, Fine Ground Raw Bone,	55.00
Mapes' Complete Manure (clay soils) per 1,000 lbs.	25.50
do. do. do. (light soils) per 1,000 lbs.	25.50
do. do. do. "A" Brand, (wheat) ℔ 1,000 lbs.	20.00
do. Corn Manure, per ton	49.00
do. Beet do. do.	49.50
do. Cabbage do. do.	47.50
do. Tobacco do. do.	52.00
do. Fruit and Vine Manure, per ton.	37.00
Stockbridge Rye Manure, do.	45.00
" Wheat do. do.	45.00
" Seeding Down Manure, do.	40.00
Bowker's Wheat Phosphate, per ton.	40.00
Baugh's Raw Bone Phosphate, per ton	33.00
Baugh's Manure for Tobacco and Grain, per ton	45.00
Walton, Whann & Co.'s Raw Bone Phosphate	40.00
Gypsum, Nova Scotia, ground, per ton	8.00

A Crop of Frogs.—Seth Green is of the belief that many farmers have fortunes in their present worse than worthless frog ponds. A little care in the cultivation of frogs, he thinks, will bring good returns in a large crop of food for family use, and also for the market.

LAST CALL.

Important Notice.

We invite special attention of all Readers to the following: For the reasons stated, we prepared a large and extensive list of Premiums. This was done early last year, at a period of *low prices*, and such favorable terms were obtained that the offers were very liberal. By reason of the special arrangements, all our readers can obtain useful, desirable articles and Books at very low rates *when* taken as premiums. Many thousands have already availed themselves of these advantages, and thousands of others *should do so*

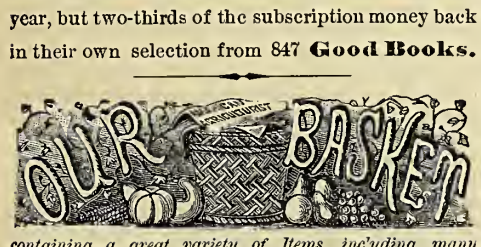
AT ONCE,

for the premium offers must close this month. The prices have advanced generally, and our contracts for obtaining them on the terms offered *end with this month* (June). ☞No Premium Articles can be given which are not called for this month.

But there is plenty of time before June 30, *to fill up any premium lists already started, and to form* **new lists** *and secure any Premium desired.*

We hope that, on their own account, our readers generally will embrace this opportunity to get the Books and other articles available, while it is in our power to supply them on the liberal terms stated in our Premium List. (A copy of this list will be promptly mailed free to any one desiring it and sending for it by postal card.)

BOOKS and LIBRARIES, for one's own use, for a neighborhood, for Farmers' Clubs, etc., ought to be obtained *this month* through these premium offers. Ten or more persons forming a Club of Subscribers get not only this Journal for a year, but two-thirds of the subscription money back in their own selection from 847 **Good Books.**



containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Putting Plants to Sleep.—In a recent lecture by the President of the British "Association for the Advancement of Science," Dr. Allman presented some experiments which show that the life of a plant, in at least one particular, is not so very different from that of an animal. A Sensitive Plant, the leaves of which, as many of our readers are aware, will "wilt," or fall down at the slightest touch, was confined under a bell-glass in which a sponge filled with ether had been placed. At the end of half an hour the plant was without "feeling"; all its leaves remaining extended, and showing no inclination to drop when touched. After being removed from the bell-glass, the plant soon regained its peculiar sensitive properties. Ether will also arrest the germination of seeds for a considerable time, without doing any injury to them.

Agriculture in Pennsylvania.—The Pennsylvania agriculturists have learned that "nothing succeeds like success." Last fall the Agricultural Society had a fair on the Centennial Grounds and in the "Main Building," and great was the success thereof. The Society's Treasury is astonished by a sensation of fullness, and its officers are making arrangements for a show this fall which promises to be a remarkable one. The Penn. Horticultural Society will coöperate, and the refinements of agriculture in its widest sense, will be presented by them. But to keep the "boom" a going, the State Board of Agriculture will do some preliminary agitating this month. A Summer Meeting is to be held at Gettysburg on Wednesday the 9th, at 2 o'clock P. M. A large number of practical and interesting subjects will be presented by competent persons, and discussions are to follow. No limit is set to the duration of the meeting, but it is to be protracted until the business is disposed of. Nor are there any restrictions as to who may attend, "the public are invited to attend, as the discussions will be open to all." Information may be had of the Secretary of the Board, Thos. J. Edge, at Harrisburgh.

What This Number Contains:

The Work of the Month, with numerous helpful hints about it for this hurried busy season, on pages 214 to 216, and the June Bee Notes, page 220.

A Special Feature of this paper is the KEEPING of ONE COW, in Villages and Cities, as well as the Country—its convenience, healthfulness, comfort, and especially its economy. See example and notes about it, page 221, and the Prize Essay, page 230.

The most famous living Cow is pictured and described on page 225, and Dairying Hints on pages 226-7-8.

Noteworthy Herds of Cattle are talked about page 226.

Curry Combs are numerously pictured and described, pages 228-9.

New Suggestions for Iron Fence Posts, that may perhaps prove of great general importance, with other talk "on the fence" question; pages 222-3.

A Commodious $1,500 Country House, with plans and detailed specifications will meet the actual wants of many, and be suggestive to multitudes of others; page 224.

The Lawns about our houses have a new help to neatness in the "Lawn Sweeper," described on page 221.

The Balloon Humbug has "gone up," with sundry congeners; pages 218-19.

Weather Indications for Farmers generally, are to be helped forward by what the "Signal Service" is planning. See the new Farmers' "Weather Case," page 231.

Gardening in Public Institutions, by Peter Henderson; page 234.

For Rock-work Plants and others, see pages 233-4.

Hints and Helps for Farmers of sundry kinds; pages 226-7-8-9, and elsewhere.

Household Matters in quantity and variety, pages 236-7.

And for Boys and Girls there are sundry useful things, with pictures, pleasing, puzzling, etc., including the Farmer Boy's first sheep shearing, on pages 238, 239 & 240.

The "Basket Items" have no relation to a "waste basket," but are *condensed* information on a great variety of topics. See pp. 217-8-9, 220, and over on pp. 245-6-7.

It is well to always run one's eye over the advertising pages of this Journal, and see what is offered, by whom, etc., as a source of information. There are usually *new* and valuable implements, and other things worthy of attention, while no vile or quack medical nostrums are present to disgust the old, or deceive or allure the young. No man is admitted if there is not good reason for believing that he has both the *ability* and *intention* to do what his advertisement promises. The Editors have full veto power over every advertisement offered, and they exclude the advertisements of every party whom they would not themselves patronize, if wanting the articles offered. ☞When corresponding with any of these advertisers, sending for their circulars, catalogues, etc., it is well to inform them that you are a reader of this Journal. They will know what *you* expect (and what *we* expect) of them in the way of prompt and fair treatment.

Hastening Prairie Sod Culture.—The long time general practice has been to break up prairie sod in June and wait until the following year for it to rot. In "Editorial Notes by the Way," in Minnesota, published in the *American Agriculturist* last November, p.p. 457-8, instances were given of success in putting crops at once upon the newly broken prairie. Mr. Clarkson, in Nebraska, first turned a 3-inch sod and followed with another plow throwing an inch of the lower soil upon the sod; then harrowing it well he planted it immediately. Mr. Youmans and Mr. Nevins, in Marshall, Minn., broke the sod in May to July; in September they cut the sod with a disk-harrow or sod-cutter, and with a deeper plow turned them under, and got a much larger yield of spring wheat. A letter before us, from Jno. A. Owen, Esq., in Central Dakota, dated April 15, says: "We are using the Randall Wheat Harrow on sod broken last week, and sowing wheat at once. It puts the land in better condition than most of last year's breaking is in—cuts the sod all to pieces. Costs about $30. Tell all parties coming to the new prairies to get them by all means, or at least some wheel-harrow."—We suppose he means some sod-cutting harrow. It is certainly of great importance to new settlers to gain six months or a year in getting the prairies into crops. We invite further correspondence from those having experience in this matter.

"Canoe and Camera."—This is the title of one of the most entertaining and exquisitely illustrated books of the season, which the Orange Judd Co. have in press, and which will be ready when this reaches our readers. It is the result of recent, personal explorations by the author, Mr. Thomas Sedgwick Steele, being, as he terms it, "A Photographic Tour of Two Hundred Miles through the Maine Forests." The work is embellished with sixty illustrations of scenery and character, by well known artists, with new Maps of the State prepared expressly for this book, and the story is told in a most fascinating manner. It is one of the most delightful books of the year. Sent post-paid from this office on receipt of the price, $1.50.

Milk and Milking in Texas.—It may seem strange to those who know of Texas as the great grazing State of the Union, to learn that nothing is more scarce there than milk, and that the owners of vast herds use butter brought from northern dairies. This was our experience 25 years ago, and we learn from recent correspondence that matters in this respect have not changed. A friend in Anderson Co., "W. B. W.," in reference to an article published some time ago on "Allowing Calves to Suck," writes, describing the manner in which the relations between cow and calf are managed in that State. It reminds us of what we have seen a hundred times, and is of interest as showing the very different management given to animals, according as we raise them entirely for their carcasses—beef—or for the products of their bodies when alive. Our correspondent writes: "Here in Texas, it is almost the universal custom amongst farmers to allow the calf to suck. When a calf is allowed to draw the milk from a young heifer, the mother has been taught a lesson which she will never forget, she has learned to hold the milk from the hand of the milker, and retain it for the calf, and will never afterwards give all her milk freely. It is amusing to see the process by which many Texas farmers manage to draw half a gallon or so of milk from a fresh cow. First, the calf has its turn, and takes a good pull, the cow in the meantime, with half-closed eyes, contentedly lets the milk down, after a while the calf is gently moved to one side, and fastened to the fence or held by a rope, by an assistant present for the purpose; the milker now takes his turn, and as cautiously as possible, draws down the milk. Presently a change takes place, the stream gets smaller and then suddenly stops. The cow, now wide awake, has turned her head and discovered that her offspring is not the milker, and no more milk will she give, except for the calf, which is now untied and allowed to have its turn again. The milk flows once more, and again slowly and cautiously the milker (with quart can in hand) takes his stand (for sitting is out of the question) on the opposite side from the calf, and they both pull together, the outwitted mother, not knowing who she is giving the milk to, calmly resigns herself to them both. [We have seen this performance varied by the Mexicans, where the milker is usually a woman. The calf begins to suck, and is pulled away by the milker, who takes its place, armed with a short club. The milk is received in a gourd or earthen dish, and the woman, between milking with one hand and holding the dish and clubbing the calf with the other, is very busy. Sometimes, if the calf is a strong one, milk is not the only thing that is upset. ED.] This is the usual custom all over the country, the consequence of which is, that between the two the cow is rarely milked clean, and in three months she is dry altogether, or the trouble of getting a pint from her is so great that it is willingly resigned to the calf. I know a dairyman in this neighborhood who owns a lot of fine milk cows (as he terms them); he is now milking *twenty two*, and from that number takes *sixteen* gallons daily. One may visit ten farm houses, the owners of which keep from six to a dozen cows, and at eight out of the ten there cannot be found milk sufficient to whiten a cup of coffee. In this town of several thousand inhabitants, situated in a fine grazing county, it is almost impossible to buy country butter. During the winter months we use western altogether, at from 35 to 40 cts. per lb., while milk direct from the dairyman costs ten cents per quart in summer, and from 12½ to 15 in winter. One reason why such enormous prices prevail in the best grazing State of the Union, is the utter want of management with the calves, and the pernicious practice of allowing the cows to be milked by them."

Damage by Insects.—It is estimated that the amount of injury done by insects in the United States is $200,000,000. The good they do is another question, to which no answer is given, and cannot be given in figures.

The Size of Cows.—The size of the cows a dairyman may desire for his herd, is somewhat a matter of fancy; but, other things being equal, when the cost of feeding, etc., is taken into consideration, the medium-sized cows are the most profitable. Cows are machines for making coarse food into that of a more concentrated and valuable form, and, like other machines, there is a size that does this work with the greatest ease, with the least waste, and therefore greatest profit.

Do Thistles Enrich the Soil? — It is stated that a good growth of thistles (Canada) leaves the soil richer than before. This is doubtless the truth, and the same may be said of any crop, provided it is not removed from the ground This is merely the general way that soil is made rich in the organic elements that are so essential to the growth of profitable crops. But there is more than ordinary ability possessed by the thistle plant to enrich the soil. The roots penetrate to a great depth, and bring up large quantities of potash and other valuable constituents, and deposit them upon or near the surface, as their stems and leaves decay. Again, the mechanical action of a vigorous growth of thistles is to loosen, pulverize, and render the soil more accessible to the roots of other plants Granting that the action of the thistle plant upon the soil is good, we must look at the other side of the question. What is the cost of this method of improvement? While the thistles hold possession no paying crop can be obtained. When useful plants are sown, they must be carefully tended, or the thistles will crowd them out Lastly, the bringing up of valuable substances from the subsoil, can be as well done by plants that are themselves useful for food, as clover, etc, and no miserable weed afterwards left to infest the ground The best that can be said of the thistle is that it is a miserable prickly pest, which, when allowed to have its way, loosens and enriches the upper soil.

The Tenth United States Census will be taken this month, and all persons should be ready to give prompt, full, and accurate answers to the questions presented by the Census taker Any opposition to an open statement of the plain facts springs from an ignorance of the duties of the Officers detailed by the Government to gather the information, or a thoughtless disregard of the important objects for which the statistics are to be obtained. The value of the Census depends upon its fullness and accuracy, and to secure these ends it would be well for all persons to take a little time and get ready to answer the questions that *must* be asked A rainy day may thus be employed with profit to all concerned.

Roots.—It is often the case that one has a small piece of ground that can be easily put into roots. An acre or so thus occupied will give excellent returns for the trouble of sowing and attention while growing. Sugar-beets may be sown now, and Ruta-bagas and Turnips a month or six weeks later. Where an early crop has been removed, or one failed, it may be useful to try a late crop of roots, manuring well before sowing.

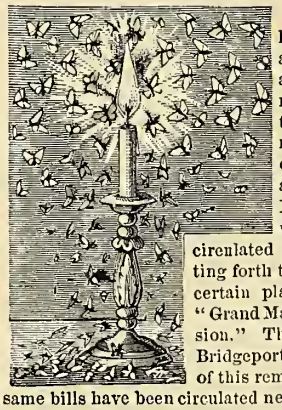
Clearing a Drain.—If the drain is a short one, such as that which leads from the house to some spot not far distant it is often the quickest to take up the whole drain Such drains, if stopped at any one place, are generally more or less filled all along and need a cleaning throughout. When the drain is a long one, and the locality of the stoppage is known, then open at, or above the point of obstruction, and after removing the impediment, the drain should be flooded with an abundance of water at that point. A force-pump is an excellent aid in this work, as it will give a pressure that will, in many cases, force all small obstructions from the drain.

Science vs. Common Sense.—Prof. Huxley hits the nail upon the head—and this is a thing that he is very apt to do—when he says: "Science is simply common sense at its best, that is, rigidly accurate in observation and merciless to fallacy in logic." When facts are seen as they really are, uncolored by prejudice, or obscured by ignorance, and are weighed in the balance of a cool sound judgment, we may say they are treated scientifically, and the man who can do this is scientific, has common sense, which he exercises intelligently. Such a man may be a mechanic, or a professor in a college; a farmer, or a lawyer. Let it be understood that science is not above the masses, because the masses have common sense, and it may be intelligently exercised.

The Cabbage Flea.—"H. G.," Simmons, Mich. This is often very destructive in the seed-bed, and where it is known to abound, it is best to anticipate their coming, and just so soon as the young plants appear—when they first break through the soil, give them a dressing of air-slaked lime, or a mixture of ashes and plaster. Equal parts of unleached ashes, sifted to remove bits of coal, and land plaster, thoroughly mixed together, and kept in a dry place, is not only useful to keep off small insects, but in its application the soil is benefited. Market Gardeners, near New York, use shell-lime for this purpose; it is exposed to the air until slaked, and then kept closely covered; where shell-lime can not be had, ordinary or stone-lime will answer; the other is only preferable because it makes a finer powder. Either of these sifted over the young plants, so as to cover them with the dust, is the most effective remedy thus far found for the little beetle, which, from its ability to jump, is popularly known as a "flea." Where but a few cabbage plants are required, they may be raised in boxes elevated 5 or 6 feet above the ground; this distance being too great for the leaping powers of the insect.

Soil for Sugar Beets.—The best Sugar-beet, when properly grown, should be conical, and with a single tap-root. To grow such beets the soil should be deep, mellow, free from stones, and abundantly rich. A deep sandy loam, with a plenty of vegetable matter, may be expected to produce, with clean culture, a profitable crop of Sugar-beets. A strong clay is not suitable, neither is a soil that is low and naturally wet and cold.

Sundry Humbugs.



Sometimes a fraudulent scheme shows such an amount of ingenuity and knowledge of human nature, that we are tempted to overlook the rascality of the thing in our amazement at its audacity and 'cuteness. For example, handbills were recently largely circulated in New England, setting forth that there would be at a certain place on a given date a "Grand Mammoth Balloon Ascension." The bills before us give Bridgeport, Conn., as one place of this remarkable show; but the same bills have been circulated near other large places in New England, and the country for 20 miles around there well notified that the "ascension" would take place at these towns on given days. This handbill is something remarkable. On one side it proposes to have

16 MAMMOTH BALLOONS IN THE AIR AT ONE TIME.

Then each of these balloons is to "carry two or more daring æronauts, who will, when the balloons reach an altitude of 3,000 feet from the ground, LEAP OVERBOARD and float gently down to mother earth again by means of parachutes."—There is a picture with many balloons and their occupants going down in parachutes. It must be, as the bills say, a "Marvellous Spectacle," these chaps coming down, while there are "fifteen beautiful tricolored balloons soaring away towards the sun," and we may add in the words of the showman about the eagle—"the higher he flies the nigher he'll come to it."—But all this strikes us as a great waste of balloon material, for the æronauts to leave their balloon, to go off to the sun and get burned up. But as we are told that the expenses are in part paid by a "subsidy allowed by the governments" of the different æronauts, we suppose they can stand the loss. But this side of the band-bill is nothing to the other side. There we have

"A MAGNIFICENT AND THRILLING BALLOON WEDDING

away up among the clouds." This is all to be done in, or on, the "Sixteenth Balloon," which will represent nothing less than "Cupid's Bridal Chariot." This balloon holds "70,000 feet of gas," but that's a trifle to the amount used in inflating the description of the wedding. Its all very funny, and at the same time very wonderful. When the ceremony is over, the balloon is to be lowered, the bride to be presented with $100 in gold, then "the wedding party will be started on their heavenly tour of bliss." Whether this "heavenly tour" means that they will be set adrift in the balloon is a matter about which we are left in doubt. When the bill calls these

"GRAND, SUBLIME, AND NOVEL ATTRACTIONS,"

we feel how weak the language is when it would express a "big thing." No wonder that people crowd by thousands to the towns where all these wonders are to be seen, all for nothing too. To be sure there is no Balloon Show at the time and place advertised, but people having come out for a holiday have some money to spend, and they fortunately find that there happens to be a circus at the place and they can go to that. It is all

A DODGE OF A TRAVELLING CIRCUS

to draw a crowd at the place and on the date where it is to be.—We should say, by the way, that the show is not Barnum's, as one of our correspondents quietly intimates; he has a way of presenting enough attractions inside of his tents to induce people to come to them, and would not at any rate resort to *such* a miserable deception. As this fraudulent bill is circulated solely in rural communities, we think it proper to warn our friends against being deceived by it. We have heard that the trick was played quite extensively in Texas and some others of the Southern States last year....There are some schemes that are not really humbugs, but they allow

PEOPLE WHO WISH TO BE HUMBUGGED

to deceive themselves. Take, for example, certain silverware which is extensively advertised, four showy pieces for $5. It takes not much figuring to show that here a caster, a cake-basket, and two other large pieces, are offered at $1.25 each. No doubt that those who receive these articles will feel that they have been defrauded. We have seen the articles sent out by one establishment, and think they are as good as can be afforded for the money. But what does one want of plated casters and cake-baskets at $1.25 each? The majority of people fail to consider that a thing offered for $1.25 is not likely to be worth any more, and a cake-basket that has not probably near $1.25 of actual silver on it is not worth much. Those who wish *low-priced* plated ware will have no difficulty in finding it, but it is far from being *cheap*.

RECIPE TO MAKE SOAP.

There are parties who sell recipes to make various things: recipes for the manufacture of Honey, for making Cheap—and dangerous—Illuminating Oil, or for making of somebody's Soap, are among the most common. One of our readers sends a recipe for soap, and asks what we think of it. In the first place the recipe, though it says so, is not for "making" soap, but for mixing it with other things. It starts with "any kind of bar soap," to which are added a solution of Caustic Soda, and Alum, Borax, and Benzine. These are melted and mixed together, and there is no "making" of soap about it. The addition of Soda and of Borax to soap in washing is sometimes practised, Alum is altogether useless, and the small quantity of Benzine directed can make no difference whether it is put in or left out. The humbug attached to the thing is the threat: "The Holder Hereof is Warned not to Divulge or Make Known any of the Ingredients Comprising this Soap,

UNDER PENALTY OF THE LAW."

We should like, just for the fun of the thing, to know *what* law? If a person paying a dollar for the recipe agrees that he will not give it to another, he is probably morally bound to keep his promise, but as to any penalties of the law, that is simply nonsense.....Inquiries begin to come about

"THE CO-OPERATIVE COMPANY OF CANADA,"

which proposes to sell all sorts of dry goods at very low prices, or as their circular says at "Fifty to One Hundred Per Cent Cheaper" than the same goods can be bought in stores. We as yet know nothing of this "Co-operative Company" beyond what its Circular states, and this reminds us strongly of a "Co-operative Store" at Chicago 8 or 10 years ago, that had the same name and made similar offers. In that case we could not see where the catch was, but feeling that where goods were continuously offered at much less than real value, there must be something wrong, we advised caution. That Chicago thing went on swimmingly for a while, gave people a sufficient number of good bargains to inspire confidence; those who bought once found the things so cheap that they would order again for themselves and their neighbors. One day the Co-operative Store ceased to co-operate, and the co-operators were not to be found, and a large number of persons are still waiting for the goods for which in their confidence they had sent their money. Whenever staple articles of trade are offered below their real value it is well to be on one's guard. Such things may be occasionally sold at a sacrifice, but it can not be done as a regular business. Besides if sold "100 per cent below" the price asked by others, what is that but offering to *give away* the goods? Our Arithmetic says "100 per cent" is the whole of a thing, and the only thing we can think of likely to be *sold* in that way is a piece of property "mortgaged" beyond its value, the purchaser being responsible and assuming the "bond." ....It is well

TO REMIND FARMERS

that this is a favorable season for the visits of the "Mowing-Machine Knife-Sharpener man." He will sell you one very cheap on condition that you will act as agent for their sale to your neighbors; you will please give him your address that the articles may come all right. In due time you will bear that the rich "note shaver" up the road, has been buying a piece of your paper, or be notified that the bank at the next town has discounted a note of yours. It may not be knife sharpeners, but whatever it may be, don't act as agent for travelling venders, and don't sign your name for any purpose at all, not even your address, for any one unless you *know* him well.

MEDICAL MATTERS.

When we take up the pamphlet or circular of a new medicine we are sure that it will contain an account of how the stuff came about; the venders of these preparations seem to think it necessary to publish some remark-

ahle tale. At one time it is a dying man who has just strength left to direct his son to the secret drawer that contains the recipe; at another the recipe is picked up on the sea shore, it having been placed in a bottle and thrown overboard from a sinking ship; or one has to go to Germany to learn about American plants, but the favorite way is to learn, as Eddie Eastman did, of the real wild original ab-original—and this turns up in no end of forms. Here is the story of Doct. Morse's

INDIAN ROOT PILLS,

and a very touching one it is. Doctor Morse had a father, and after spending large amounts in having him educated as a doctor, he sent his son off to get finished among the Injins, or as the pamphlet has it "to learn their successful manner of curing disease in nature's own way from plants and roots." Father Morse was sick and his son was still among the savages, he got sicker, he was thought to be dying and "every eye was bathed in tears," but "a rumbling noise was heard in the distance, like a mighty chariot winding its way hither, when all at once a fine span of horses [color not stated, but they were "fine"] before a beautiful coach [not behind it] stood before the door, out of which alighted a noble and elegant looking man."—The story is soon told.—This was Dr. Morse, the son; he just went to his carriage and took out some plants and roots that he had learned about "from the Red Men of the Forest," gave the stuff to Morse the father, who didn't die at all, but at the age of 95 rode 35 miles "in order to spend his birthday with the celebrated doctor, his son"—and if you don't believe it, there's a picture of the Senior Morse reading the Bible.

THE MORAL OF IT ALL IS.

If you are sick and want to be well, take these Indian Root Pills. When we wade through all this dreary stuff, with which the literature of quackery is filled, we are forced to the conclusion that such stuff is believed, for there is scarcly one of these various pills, syrups, and other nostrums, that does not give some such ridiculous story of its origin. All these stuffs, like their pills, start out with the statement, that all disease springs from "impurity of blood."—To get well, purify the blood—these pills purify the blood, take 'em and be well. Its all as plain as logic, and all an outrageous swindle upon credulous and ignorant people.....Inman is not alone

IN THE "FREE" RECIPE LINE.

One is sent out by a person in Rochester, which differs from Inman's recipe, in using some terms that are well known in medicine and pharmacy, but there are others that are not. To get the ingredients, one must go to a "botanic drug store," which are few and far between. It may be that all the constituents of the recipe *may* be had at such a shop, but the names given, are not such as are recoguized in science, though they may have a meaning in "botanic drug stores." But the drugs are at any rate difficult to procure pure, and it all amounts to the same old story—The advertiser has "made arrangements for their importation," he can always have some of the pure stuff, which can be had for a certain sum. We are told that the "purpose of making the remedy known, is not to realize money,"—of course not, for there is the talk about "substituting joy for sorrow,"—"defeating empiricism,"—"duty,"—"benefit my fellows,"—"went about doing good,"—but the stuff may be had for $3. Is it possible that the writer of such goody goody talk, can suppose that his hypocritical cant is not all seen through? And yet, alas, it is not.

The Liver Fluke, or "Sheep Rot."

Within the last few months there has been great destruction of life among the sheep of Great Britain, from the "Rot," which is the result of an unusual development of the liver parasite known as the "Flukes," (*Distoma hepaticum*). These animal parasites, which are something more than an inch long when full-grown, take up their abode in the passages leading to the liver, and when numerous, choke up the smaller channels, arrest the flow of bile, and otherwise derange the action of the liver. "The sheep suffer first from jaundice, which causes the skin and eyes to become yellow. At this stage, the sheep thrives and fattens rapidly, and the yellow color of the fat of many carcases of mutton that are sold in the market is due to this bilious derangement. In a short time the sheep fails, the skin and eyes become white and bloodless, a watery tumor appears beneath the jaws, the abdomen swells from dropsy, the wool becomes harsh and easily parts from the skin, and after lingering some time, the sheep dies completely rotten, with every organ diseased." A pasture can become tainted with and communicate Rot to healthy sheep in the following way: The sheep infested with Flukes, pass the mature worms and their eggs, which lodge in the ground. The eggs soon hatch, and the young worms find a host in the mud snails common in low pastures. When these snails are swallowed by sheep—as they frequently are—the "fluke" reaches its most desired quarters, where it is most destructive. Sheep that are pastured on dry land, are exempt from this trouble. When the Flukes are already in the sheep, a cure may be often found in the use of the following mixture: Ground Ginger, 2 oz., Saltpetre, 3 oz., Carbonate of Lime, 1 oz., Common Salt, 2 lbs., with 6 quarts of Water, and the same quantity of Spirits of Turpentine. A dose of two oz. of the mixture, given at intervals of four days, may effect a cure, if used in the earliest stages of the disease. When the Flukes are sufficiently numerous to produce the symptoms of Rot, the animal is past help and should be killed at once.

Top-Dressing for Grass.—"A. S. P.," Flatbush, L. I. An excellent artificial fertilizer for grass is Peruvian Guano; it contains Phosphoric Acid, Potash, and Nitrogen (in the form of Ammonia Salts), the three important constituents most frequently lacking when grass and other plants are not doing well. The guano costs about $60 per ton, and may be used in doses of 150 to 200 pounds to the acre, at least once a year. Apply it now just before a shower, that the rain may take it at once to the roots of the plants and quick returns obtained.

Ladders.—A neighbor of ours wants to trim a vine that is running up and over his piazza, and has neglected it because there is no means at hand for getting up to the much needed work. This is but an illustration of the many cases in which, if a ladder was at hand, important work could and would be done, which for the lack of one is neglected. There is often more time spent in doing a piece of work, in a left-handed and imperfect way, than it would have taken to have first constructed the ladder and then done the job. In haying and harvesting now soon to be upon us, a ladder is often the one thing needful to get at some out of the way place, off of some mow, stack, or even load, and just before the rush, it would be proper to provide a ladder for the emergencies of the season. All can not make handsome ladders, but every one can construct a strong one that will serve his purpose. A straight pine pole sawed lengthwise through the center, and fastened together with "rounds" of oak or other hard-wood, makes a good ladder and is quickly done.

Washing of Hill-Sides.—One of the most successful methods of preventing serious damage from washing of cultivated hill-sides during heavy storms, is to terrace the hill by plowing. At short intervals two or three furrows of the soil are turned down hill, thus making a nearly level bank at short distances, as you pass down the slope. The last furrow makes a channel in which the downward water is caught, and may be carried off at one side of the hill—at any rate it will arrest the rapid downward flow, and give the water more time to soak into the soil. A hill-side, specially given to washing, should be put into grass after being terraced. With terracing and a firm sod as a covering, very little damage may be feared from gullies made by descending water.

Old Rules in Old English.—Gervaise Markham, in his book entitled, "Of the Hunting Horse," 1668, gives directions for "dressing" a horse as follows: "For the manner of his dressing after he is uncloathed, you shall first curry him from the tips of the ear, to the setting on of his tayl, all his whole body most entirely over with an iron comb, his leggs under the knees and cambrels only excepted; then you shall dust him, then curry him again allover with a round brush of Bristles, then dust him the second time, then rub all the loose hairs away with your hands wet in clean water, and so rub till the horse be as dry as at first, then rub all his body and limbs over with an hair-cloath: Lastly, rub him over with a fine white linnen rubber, then pick his eyes, nostrils, and feet very clean, and so cloath him, and stop him round with wisps, if you water within the house, otherwise saddle him after his body is wrapt about in a Woollen cloath, and so ride him forth to the water."

The Test of an Animal.—The blind devotion to the pedigree only, that prevailed a few years ago, has in great measure passed away, and intelligent breeders have come to understand that something more than a long line of recorded names is necessary to make an animal of value. A good pedigree is one that has the animals making it, of the very best quality, and that quality uniform and identical. Aside from the high standard of the ancestry, breeders look more to the animal itself—in other words, more to its own record of what it has done and can do, than to the fact that its parents, through a long line, have their names in the Herd-book.

Stagger Bush.—Our inquiry about "Stagger-Weed" has brought a note from Mr. P. Sutton, Lackawanna Co., Pa., concerning the effects of the shrub popularly known as "Stagger-Bush." This, the *Andromeda Mariana*, is a very showy shrub, from 2 to 4 feet high, with pure white flowers, looking very like large Huckleberry blossoms. Unlike several of the Andromedas, it is deciduous, and when the new foliage comes out in early spring, it is greedily eaten by young cattle when first turned out. These, Mr. S. says, are made very drunk, and sometimes die from the effects of the poison. The popular remedies are: bleeding, by slitting the ears and the tail; giving salt, or whiskey, and sometimes a half-pint of melted lard. The plant extends from Southern N. England to Florida, and sometimes is very abundant.

Foot Rot, Scab, etc., in Sheep.—When a fertilizer for plants or a remedy for diseases of animals is to be advertised in our columns, it is a "condition precedent" as the lawyers say, that we shall know exactly what the article is composed of. While we wish on general principles that there were no such things as secret preparations, yet they are often convenient, and it is frequently cheaper to those who would use such articles, for them to purchase them ready-prepared for use, than it would be for them to undertake to prepare them on a small scale themselves. Buchan's preparations for sheep can hardly be termed secret preparations, as the terms Cresylic Dip and Cresylic Ointment indicate at once that their active ingredient is Cresylic Acid—one of the coal-tar products, and whatever else is in them is merely for making easy the application of this. These preparations have been so long before the public that they may be regarded as standard articles, and they are successfully used for the various external parasites that infest sheep over a wide extent of country.

"Kansas Millet."—It is very difficult to keep the run of the common names of the grasses. T. Overton, Hamilton Co., Kans., sends a package of seed of a grass called in his locality, "Kansas Millet."—An inspection showed the seed to be that of *Panicum Crus-galli*, the Barn-Yard Grass. This is generally known as a weed, but in some localities it is cultivated as a hay crop. In Dec., 1875, we gave an account of its culture in Ill., and now we are glad to add the testimony of Mr. Overton, who says, "It is an excellent forage plant. I think it would be good for soiling."

Beautiful Dried Fruit.—Those who see the dried apples at the stores that have a tempting whiteness, being about as light colored as the fresh fruit, no doubt wonder how they can be dried so nicely. The fact is that such fruits are not only dried, but bleached. They are subjected to the same agent that is used to give hops a bright color, and to impart to straw hats their whiteness—viz.—sulphur. It will be recollected that we gave last year an account of the Zimmerman Fruit Dryer and its workings; not long ago the inventor wrote us that he had been experimenting in bleaching fruit, and sent us a sample of apples, quite the whitest we ever saw, bleached in his Dryer. Hereafter the Dryers will be sent out with the necessary change in the furnace to adapt it for bleaching, and directions for the operation will be given. Of course bleaching is only practicable with fruit in this or other closed Dryer, and could not be done with fruit in the open air. As the question is sure to be asked if the fruit is rendered any the less wholesome, we anticipate it and say—not in the least.

A Needle is a Wonderful Thing,—were not needles so common and so cheap we should think so. If one must have a needle and had only a bar of steel, what work it would be to get a needle from it! Notwithstanding great improvement has been made, a large share of the work on a needle is done by hand, indeed several hands, for the operations from the wire to the perfect needle are numerous and each workmen performs but one. If a simple needle is a wonder, a paper of needles is a bundle of wonders. Having occasion to use a particular needle for some microscopic work a short time ago we selected it from a package of needles as put up from the London Needle Co. Here were 100 ordinary needles of different sizes in papers, and 20 large kinds for darning and other uses, and the whole sold, sent post-paid, for the ridiculous price of 25c. We came near forgetting our microscopic work in view of the microscopic profit that must fall not only to those selling, but especially to those making the needles. Who would undertake to make 5 needle-eyes for a cent—letting alone making the rest of the needle.—It is all very wonderful—and as for quality—the microscope sustained the favorable report of the user of the needle.

The Semi-Centennial Anniversary at Lima, N. Y., to be held June 6—10, will doubtless interest a good many of our readers who have enjoyed the educational advantages of the Seminary that has flourished there for fifty years past. Probably more than ten thousand young men and women have been taught in the Institution, many of whom have filled important stations of honor and usefulness. All Alumni and Students now living are invited to come together at the above date for a Grand Reunion, and we hope to be able to be present to greet some of those who were classmates nearly forty years ago, though of course but a small number of the four hundred old comrades are now living. For circulars giving particulars, address Rev. G. H. Bridgman, Principal, Lima, Livingston Co., N. Y.

Bee Notes for June.

BY L. C. ROOT.

The system of management for the present month must be determined by the intentions of the bee-keeper. If box honey is desired, the boxes should now be properly arranged upon the hives. If the Extractor is to be used, extra combs should be supplied for this purpose. If increase of swarms is the object, rather than surplus honey, preparations for additional swarms should be made.

In many locations, this is the month when natural swarms will issue most freely. In such sections, swarms may now be made artificially with most profit. There are many who allow swarms to issue naturally, but when unrestricted as to number, this is never desirable. Those who permit it should remember that it belongs to the benighted days of box hives and brimstone pits. It would hardly be possible for us to give the different methods of artificial increase in the limits of these Notes. They are treated upon at length in every practical work on the subject, and no progressive bee-keeper can afford to do without at least one such good work.

"How much increase is desirable?"—This question is often asked. In answer, we would say that probably most inexperienced bee-keepers will reach the greatest success by placing boxes upon the hives, as soon as the bees will occupy them, and allowing one swarm to issue from such, as the season induces them to swarm, but never allow more than one. In this way a reasonable amount of increase may be secured, besides probably some surplus honey if the season be favorable. After the swarm issues, all of the queen cells should be removed from the combs, except one of the largest and most fully matured; or, what would be better, remove all, and introduce a laying queen. If the motto we have often recommended, viz., "Keep each hive supplied with a laying queen at all times," was observed, the gain of honey throughout the country would be doubled. If those bee-keepers who allow their bees to swarm without restraint would study the subject and see what they are losing, they would appreciate the value of this motto. It should be borne in mind, that when two or three swarms are allowed to issue, the old colony is without a queen from 20 to 25 days. At a low estimate, 1,000 bees would have matured each day from the eggs which, under favorable circumstances, a queen would have deposited during this time. The loss arising from the absence of a queen for 20 days would amount to 20,000 bees. A colony should not be left queenless for one day, as one can not afford the loss even of 1,000 bees. If much increase of swarms is desired, have laying queens in readiness, and when a colony is formed, which can best be done artificially, furnish it with a laying queen. Remove the boxes so soon as they are full, and supply their places with empty ones. All boxes and frames used should be supplied with starters, or full sized cards of comb-foundation.

[Mr. Root very properly advises bee-keepers to have one good work on the subject, but is quite too modest to mention the fact that he has written such a work himself. The work is called "Quinby's New Bee-Keeping," and it embodies the teachings of Mr. Quinby, but the work is really by Mr. Root, and it gives in full detail all the operations of the Apiary according to the best modern practice.—Price, post-paid, $1 50.—EDS.]

Salt on Wheat.—"J. P. G.," Columbus, Ky. Salt in moderate quantities will not injure wheat, but it will not benefit it nearly so much as is claimed by some. For instance, it will not so moisten the ground in dry weather, as to avoid the ill effects of a drouth, nor will it destroy injurious insects. Pure salt does not attract moisture; it might possibly destroy insects if a sufficiently large quantity were used, but as so much as 5 bushels per acre are rarely applied, its effect is not appreciable It is supposed that the beneficial action of salt, is to make the straw stiff, and to better fill out the grain. Early in the spring is the season for applying salt to wheat or grass that the best results may be obtained.

How Much Hay for a Horse.—"B. F. H.," Fairfax, Ia. A horse will eat 20 lbs. of hay, and 6 quarts of grain a day, and a large horse will consume one-fourth more than that. Much depends on the vigor of the horse.

The New Water Motor.—"C. H. G.," Salt Lake City. We can give no more definite information about the water motor, nor of the address of the patentee, than we have already given. We believe the inventor is now in Europe, and is not giving any attention to his invention in this country. If any party made one for his own use, no penalty is attached to that, only a royalty could be exacted by the person holding the patent.

Condition Powders or Medicine Food.—When a food for animals, or a medicine for them, is advertised in our columns, it is proof that we know what the articles are. The "Condition Powders" to be given to horses and other animals, Egg food for poultry, contain articles well known as tonics or laxatives, to regulate the bowels; they not only contain useful ingredients, but they do not contain anything which may not be given with safety. Were we to publish the recipes, very few would be at the trouble of getting the various seeds, roots, etc., and mixing to make the powder themselves. The same things ready prepared, and to be bought at a moderate price, will be purchased, and as they are ready for use, will be given, when otherwise they would not.

The English Bee-Keepers.—The season of 1879 in England has been one of general disappointment, and none have suffered worse than the bee-keepers. "And now that this wretched season ('Agricultural Gazette,' London) is coming to a close, those that really care for their bees must unbutton their pockets and buy food for them .. It will take years for the country to recover the loss of hives of bees during the season of 1879, and bees must not be only very scarce, but also very valuable."—The English bee-keepers may have the consolation that the probabilities are entirely against their having another such an unfavorable year.

Abortion in Ewes.—"J. C. D.," Clinton, Conn. A ewe cannot be expected to produce a strong lamb, or a lamb at all, unless provided with nutritious food. "Herd's Grass," (Timothy), and salt hay, is not sufficient to properly nourish a breeding ewe, and enable her to produce a lamb. "Out of nothing, nothing comes." A pint of bran and oats, or less, a day for each ewe, would probably have prevented the loss of the lambs.

The Post-Stamp Nonsense.—Every now and then a letter comes to the effect that the writer has heard that a price has been offered for a million cancelled postage stamps, and asking us to give the address of the person making the offer. Several years ago we heard of a similar offer in England. Parties here seem to have the matter all straight except the name and address of the one who will pay the $5, $50, $100, or whatever the sum, which varies greatly. The whole matter seems to us a piece of idle nonsense. Cancelled stamps are of no other possible use than to grind up to be worked into paper, and the mills can pay but a few cents per pound for this, or any other waste paper. But who makes the offer?

Record for Dairy Cow.—"W. K." The new association for recording yields of Dairy Cows, is now in operation. The Secretary is L. S. Hardin, 309 Greenwich St., New York. The object of the Association, is the improvement of dairy stock, by encouraging the regular noting of the yields of butter and milk, and by furnishing an opportunity for recording these in permanent form, of which certificates may be given. Any cows or bulls from recorded cows, can be entered irrespective of breed or kind. Knowing by these records the value of each of his cows, an owner will be apt to keep only his best animals, and endeavor to improve his stock, and if this recording should become general, it would soon double the value of our dairy animals.

Short Notes about Food.—Two aged clergymen were chatting together, when one of them, referring to his long years of effective labor, said "he thanked God for having given him lungs of brass."—The other replied "he was thankful that his lungs were not made of brass, for they would have been *worn out* long ago."—Unlike other machines, our bodies keep renewing themselves as they wear away. We eat, say a piece of bread and of meat. After being mixed with saliva in the mouth, they go down into the grinding or dissolving mill, the stomach. From millions of little tubes all over its surface, a finid is poured in called the gastric juice. By a sort of shaking up process this juice mixes with the food, dissolves as much of it as it can, and forms a sort of liquid which passes out of the right side of the stomach into a large tube called the *duodenum* (about 12 inches long). While the food is in the stomach some of it is absorbed through its coatings and goes into the blood, to be distributed through the body as described below. As the dissolved food enters the duodenum, the liver pours in a little bile, a green bitter fluid, and before it leaves this tube another kind of fluid, called the pancreatic juice, is also poured in. Now, the bread and meat (or other food), having been ground (masticated) in the mouth, dissolved (digested) in the stomach, and received its four distinct or different fluid additions—the saliva, the gastric juice, the bile, and the pancreatic juice, is a sort of milky fluid, and it passes into the upper end of the small intestine, a tube about 25 feet long in a full grown person, which coils back and forth across the abdomen down to its base, when it turns back and the whole coil passes under the stomach and down on the right side to its exit. A sort of worm-like (peristaltic) motion keeps pushing the food along. All over the inside surface of the long tube (or intestines) are millions of little open mouths of tubes that suck out some of the fluid food and carry it into the blood in the veins. This blood, carrying the food particles, flows into the left side of the heart, where a sort of force-pump sends it through arteries into the lungs. There it comes in contact with the air breathed in. Other veins carry it back to the right side of the heart, where another force-pump drives it out through the arteries that branch out to every point of the living body—even into the bones, the finger nails, and the hairs. As this food-bearing blood passes along, every part of the body picks out some particles which are just suited to take the place of other used up particles that it has pushed out into the veins—the veins carry the dead matter, some to the lungs to go out in the breath, some to the bladder to go off in the urine, some to the skin surface to escape there. Thus it is that this wonderful machine is daily and hourly rebuilt out of food....Different kinds of food serve different purposes. Carbonaceous food, as starch, sugar, etc., supply materials for making fat, and for uniting with air (its oxygen) that gets into the blood through the lungs to produce heat all through the body, just as carbon (coal) in the stove produces heat there. Other portions of food, as lean meat, gluten of bread, casein or curd of milk (called nitrogenous substances), go to build up and repair the muscles and tendons of the body—they are strength-giving foods. Some phosphates of lime in the food build up and replenish the waste of the bones....Three practical hints: As above described, it takes from different fluids to prepare the food. If one swallows food without thoroughly chewing it to mix it with plenty of saliva in the mouth, an important ingredient is missing.—*Second.* If the food is not well *ground* in the mouth, it is longer and slower in dissolving in the stomach, and that organ is over-worked, and often becomes weak and diseased.—*Third.* If too much food goes down at a meal, the stomach is overloaded and can not properly prepare the food for the next process. Some of it goes into the intestines undigested (undissolved), through the intestine, producing irritation, inflammation, colic, and often diarrhœa, dysentery, or other disorders, often of a serious nature.

Grimshaw on Saws, is a handsome volume of about 160 large octavo pages, on heavy paper, with over 200 engravings, some of full page size, illustrating every possible style of saw, from the simplest to the most elaborate gang saws. Every detail about their manufacture and use, filing, setting, gumming, and repairing, is here given, and the hook bears evidence of great thoroughness and completeness. Every patent relating to saws issued since 1790 is here given, as well as various useful tables. The author is Robt. Grimshaw, Ph. D., published by Claxton, Remsen & Haffelfinger, Philadelphia. Sent from this office for $2.50 by mail.

High Farming—What is It?—To be brief, is it the growing of the best crops on the best soil under the best conditions; and finally the crop giving the best profit in return?—No. There are cases when a comparatively poor crop grown on a poor soil with little or no attention, may give the best returns—as is the case in the imperative extensive farming of a new country. High farming is when *much* capital is expended on *little* land for the production of large crops of great value. The production of beef on the plains may be as profitable as the growing of onions, but it is not high farming—it is the character of the culture the soil receives and not the profit, that determines whether farming is high or low. High farming is the profitable farming of old thickly settled countries, and the kind that we are tending to; but as yet it is by no means the best farming in all sections.

The Farmers' Friend and Guide for 1880 is the title of a work of 200 pages about the size of the *American Agriculturist*, and filled with extracts from the agricultural papers in all parts of the country. Mr. Frank Harrison is the compiler, and at 50c. gives a great deal of excellent information for the money.

A Beet Quarterly.—"The Sugar Beet" is the title of a journal of 16 pages about the size of this, which has for its object the familiarizing of farmers with all that relates to Sugar Beets and their culture, and to give news items concerning the beet-sugar industry. The editors are Robert Grimshaw and L. S. Ware, Published every three months by Henry Carey Baird & Co., Philadelphia, at 50 cents a year.

"Two Birds With One Stone."—During a recent visit to a farmer friend, we noticed a leak in the tin pipe, through which he was pumping water for some cows and called the attention of our friend to the supposed waste, only to be informed that these holes were made on purpose to let some water run out into a large dish (which we had not observed) to furnish drink for the fowls. In this way, without any extra effort, both the cows and chickens were at the same time supplied with their necessary water.

(*Basket Items continued on page* 245.)

Keeping One Cow.

MANY MORE FAMILIES SHOULD KEEP ONE—HOW IT PAYS—AN EXAMPLE.

A business man in New York, being troubled to get good milk for young children in his family, took our advice the latter part of the winter and, so to speak, went into the dairy business on his own account. The result will be instructive to tens of thousands of families in cities and villages. He had no pasture grounds, the only convenience being a roomy stall in a carriage barn, with opportunity for the cow to sun herself and take limited exercise in a small area, say 15 by 20 feet, at the side of the barn, and this was seldom used. The stall is kept clean and neat, with fresh straw litter, and the cow has remained in excellent health and vigor. Chewing her cud and manufacturing milk seem to give all the exercise needed. Her feed has been bale hay, cut in a small hay-cutter and mixed wet with corn meal, bran, and shorts, with some uncooked potato parings, cabbage leaves, left over rice, oatmeal, etc., from the kitchen.

A laborer is paid $1 a week to milk and feed and brush her night and morning, and take care of the stable, and he is allowed any excess of milk she gives over 12 quarts a day. He prepares a mess for her noon feed, which is given by one of the boys at school when he comes home to lunch. The cow is a grade, probably ¾th Jersey and ¼ common blood. Her milk is rich, yields abundant cream, and as the owner's family say, "Is worth fully double any milk we ever got from the best milk dealers." One neighboring family gladly takes 6 quarts a day at 7 cents a quart, and would willingly pay much more if it were asked, and other families would be happy to get some of it at 10 cents a quart; but 6 quarts are kept for home use, and it is valued far above 7 cents a quart, and worth more than that amount in the saving of butter in cooking, making cake, puddings, etc. So it is a very low estimate to call the whole milk worth 7 cents a quart. No one could deprive our business friend or his family of their good, home produced milk, if it cost 10 or 12 cents a quart. An accurate account is kept of the feed; the man in charge orders at the feed store anything he desires for the cow, and it is all down on a "pass-book." Here are the figures for 100 days past:

The Cow's Debit and Credit for 100 Days.

Dr.	
850 lbs. bale Hay, at $22 per ton	$ 9 35
1,000 lbs. Corn Meal, at $1.35 per 100 lbs	13 50
400 lbs. Bran, at $1.30 per 100 lbs	5 20
200 lbs. Fine Feed, "Shorts," at $1.55 per 100 lbs.	3 10
20 bundles of bedding Straw, at 10c.	2 00
Paid man for care and milking, $1 per week	14 30
Total expenses for 100 days	$47 45
Cr.	
1,200 Quarts of best milk (12 quarts per day), at 7c.	$84 00
Money profit in 100 days	$36 55

Or, to put it in another way, the 600 quarts sold actually brought in $42 cash, and the entire 600 quarts used at home cost $5.45. The cow cost, say $65. The entire care, which was not paid in the surplus of milk above 12 quarts per day, is charged in the expenses above. The manure produced, if sold, would more than meet interest on cost of cow, and any depreciation in value by increasing age. Allow the above average to be kept up only 200 days in a year, and at the end of that time suppose the cow is sold for half price ($32.50), and a fresh one substituted, there would still be a gain of $40.60 for 200 days, or for a year a profit of $74.10.

With good feed the $65 cow will keep up a full supply of milk at least 26 weeks, and then be worth $40 for continued milking and breeding. Sell her then and buy another fresh cow for $65—a loss of $50 a year. The above liberal allowance of $47.45 for feed and care 100 days, amounts to $173.19 a year. Adding the loss of $50 for purchasing two fresh cows, makes the total annual expense $223.19. This would make the supply of milk, 12 quarts a day (4,380 quarts), cost about 5 cents per quart, or not quite 51 cents for 10 quarts. This is not an exaggerated estimate for a $65.00 cow, renewed every 26 weeks. The feed and care may be very much less than the above $47.45 per 100 days, by saving all waste foods suitable for a cow, and by securing pasturage 7 or 8 months, and especially when a cow can be cared for by members of the family, thus saving $52.00 a year. Taking the country as a whole, probably $50 will ordinarily buy a cow that will, on fair feed, average 10 to 12 quarts per day for the first six months after calving.

Let Village Residents Keep Cows.

Every family on a farm of course keeps one or more cows, but we claim that the dwellers in villages, and very many in cities can, and should, each keep a cow. *Good* milk is the best of all food for young children, and it goes a great ways in saving butter bills, and in the preparation of palatable nourishing food of many varieties. The above *actual results* show the economy of keeping one's own cow. Two to five families, according to size and numbers, can readily unite in having one cow kept, dividing the milk and expenses, and thus always have good, pure, rich milk at very moderate cost. The suitable refuse from the kitchens of three or four families would go a good way towards reducing the cost of purchased food. In rural villages summer pasturage can be obtained near at hand, which, with a daily feed of good meal will furnish a large supply of rich milk at a low cost. A boy can be secured at a small price to drive the cow to the pasture in the morning, and return her at night to the stable. A stable or stall can always be obtained at a trifling rent, and be kept clean. There are always plenty of gardeners or farmers who will gladly take the manure away so frequently as to prevent it being a nuisance, or disagreeable.

We have no doubt that all residents of Villages, Manufacturing Towns, etc., can, by arrangements like the above, secure an abundant supply of pure, rich, fresh, healthful **milk at less than three cents per quart,** *and at the same time add greatly to their home comforts, and save the health if not the lives of their little ones.*

The One Cow Prize Essay.

Our recent offer of Prizes for Essays had in mind helping families, especially villagers, in the way of keeping their own cows. The proposals, as it happened, did not quite state what we really intended, and the Judges, in awarding the prizes, very properly decided in accordance with the terms of the offer. The first prize essay is given on page 220. One or more of the others will probably be given as we find space for them. Indeed, it will perhaps be best to incorporate several of the Essays in a small Manual, for the instruction of those who can and ought to keep one cow. The Essay (page 220) will be found usefully suggestive on this point, not only to village residents, but to many farmers also.

A Lawn Sweeper.

In the Lawn Mowers of the English style there is a provision for taking up the grass as it is cut. American Mowers rarely have this handy attachment, for the reason that in our climate, when the grass is cut frequently, the short clippings shrivel up in a few hours, and are soon practically disposed of. In the moist climate of England the removal of the clippings is necessary, while with us they may usually be left without much disfiguring the lawn. Still, where the grass is thick, the clippings will often show and, especially if the grass is a little long, neatness requires it to be raked up. Indeed, many who are particular about the condition of their lawn, have come to the conclusion that it is on the whole better to remove the clippings, thinking that the advantage claimed by allowing them to remain as mulch, does not offset the slovenly appearance caused by the dry grass, and say that when the grass is properly thick, it affords sufficient shade for its own roots. In order to allow those who wish to do so, to take up the grass, the makers of the Philadelphia Lawn Mower have produced a Lawn Sweeper. This consists essentially of a rapidly revolving broom with a receptacle for holding the grass. The hand sweeper, as it appears when ready for use, is shown in figure 1, and figure 2 shows the various parts as they are separated ready for packing. The adjustments for bringing the brush to the proper hight above the ground are simple and easily made, and the collected grass

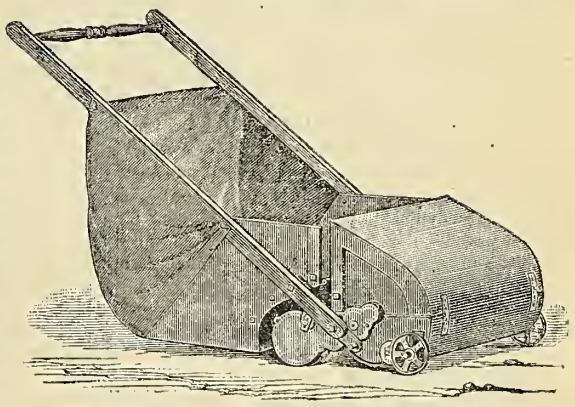


Fig. 1.—THE LAWN SWEEPER, READY FOR USE.

is readily discharged. While the broom, made of split cane or rattan, is very durable, it is so arranged that repairs may be readily made; indeed all the parts are strong and serviceable, and the whole has the substantial air desirable in a machine for use rather than for show. Not only is the Sweeper useful for gathering the grass clippings, but by taking up rubbish of every kind, it will greatly aid in the neat keeping of the lawn. Any one who has raked over the grass in early spring is aware of the great amount of trash that accumulates; this can be taken off by the Sweeper with more ease and much more thoroughly than can be done by the rake. It is the practice with many to apply to the grass in fall a top-dressing of fine manure or compost; the remains of this dressing, after all the soluble parts have been washed out of it, can be most readily removed by the Sweeper, while for taking up fallen leaves in autumn it will do most efficient service. The Hand-mower, the one shown in the engraving, has a width of 24 inches. A horse machine is made with a sweeping breadth of 40 inches, and is so arranged that its contents may be dumped without stopping. In the introduction of the Lawn Sweeper as supplementary to their Lawn Mower, Messrs. Graham, Emlen & Passmore, have contributed greatly to the ease with which a lawn may be kept in the best possible condition. When a machine was received for trial we examined it sufficiently to see the working of its parts, and left it in the hands of the man who does the work

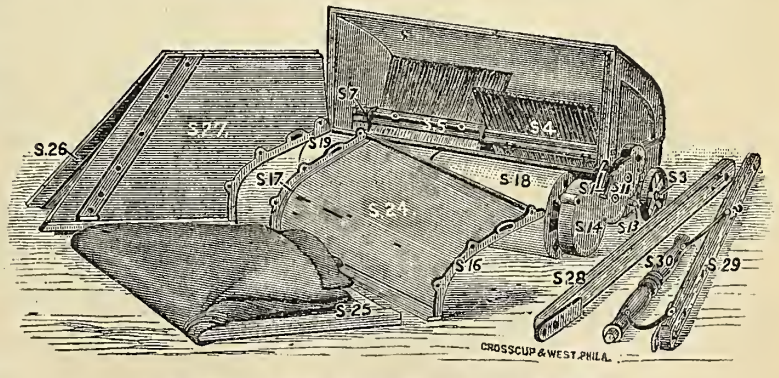


Fig. 2.—THE LAWN SWEEPER, SHOWING THE PARTS.

of caring for the lawn, without any special comment. In a day or two after the verdict was volunteered: "I want to say that that Lawn Sweeper is a very practical and useful machine."—Certainly the makers could have no more favorable comment than this from a practical man that their machine is both "practical and useful."

Fencing and Fences.

It is entirely impracticable to answer the multitude of individual inquiries for specifications, cost of a particular kind and amount of fence, etc., etc. We do not deal in or supply any kind of fencing or materials. Nor can we report upon the various models and descriptions, often not very clear to be understood, that are submitted for an opinion. All received are examined as we have time, and answered if considered important. At least nine-tenths of all the plans, models, etc., of fence posts received, are too complicated and too expensive for *general use* in farm fencing. Posts that will cost 50 cents and upward, each, will not answer, nor will those requiring much digging and "planting." As the cost of iron and steel suddenly jumped up 100 per cent, we nearly dropped the hunt after *metallic* posts for a time, though they are very desirable on account of their permanence, their non-destructibility by fire on the prairies and elsewhere, and their easy setting and their firmness when well set. The price of iron having declined greatly during two months past, we resume the subject of

Fence Posts.

Supporting Iron Posts.—A Suggestion that may Materially Aid in Solving the Metallic Post Question.

In the forms and plans for iron Fence posts, a great deal of ingenuity and expense is devoted to supporting the post firmly in the ground. A simple iron rod or bar, five-eighths to three-fourths inch in diameter, would suffice for most fence posts, if it would stand firmly in the soil. So would a wooden post 2½ inches in diameter, if of a tough, durable kind; and such posts can easily be driven, if sharpened. If the soil has any degree of compactness at 15 to 30 inches below the surface, the bottom of a very small post or rod will stand firmly enough; the trouble is at the surface. Unless the ground be very hard these small rods or posts will sway, and the various devices of collars, flanges, etc., are designed to prevent this. It occurs to us that a very simple method may be adopted thus: The places of the posts being marked out, take a sharp, narrow spade, flat, or curved like a tile-drain spade or scoop, cut out a surface hole, square or round, or triangular, 4 to 7 inches in diameter, and 5 to 10 inches deep, according to the compactness or looseness of the surface soil. If the soil is very loose, like a light prairie, this hole will be all the better if made by driving down with a sledge hammer or beetle, and withdrawing it, a piece of hard-wood (fig. 29 or fig. 30) with a somewhat blunt point, and large enough to make the hole of the size desired. This will pack the earth firmly on all sides. Then in the center of these openings drive down the iron rod posts, or the small wooden ones, as deeply as may be needed, and complete the fence, with the spaces around the posts at the ground surface left open, as in figures 31.—*A* and *B* show round and square openings made with a spade. *C* and *D* show the openings made by driving the blocks shown in figs. 29, 30; *E* and *F* show similar openings for small wooden posts.—Finally, fill these openings with a grouting, or mortar, made of hydraulic cement and coarse sand, or sand and gravel, or even a sandy loam. It will speedily harden firmly into the soil and strongly support the post. A barrel of the hydraulic lime will suffice for a very large number of posts, and cost about one cent each—depending upon the amount required by the nature of soil, size of post, strength of fence desired, and the kind of gravel or sand or cobble stones available for mixing with the cement. With gravel or cobble stones a pint of cement may answer in a compact soil requiring only a small collar. If the average be a quart, the cost would be from 1 to 2 cents per post, allowing the cement to cost $1.25 to $2.50 per barrel, according to the locality and freight expense. The present N. Y. wholesale price of common Rosendale Cement is $1.10 per barrel. The grouting can be mixed in a half-barrel or box on a wheelbarrow or wagon, and be rapidly shoveled in. It hardens in a brief time after mixing with water. Such collars will prevent rusting of iron or decay of wood at the ground surface where this is most likely to occur.—Probably a man could make the holes, drive the rods or posts, and put in the grouting of at least 100 posts in a single day's work.

Fig. 29. Fig. 30.

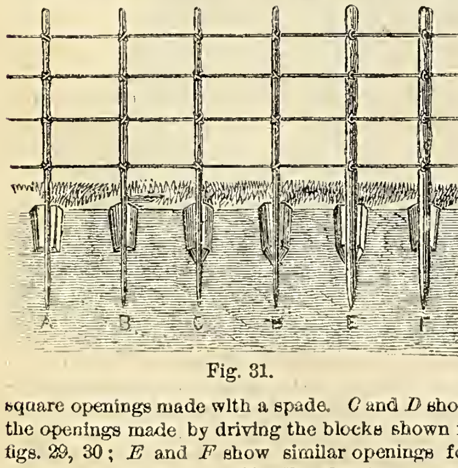


Fig. 31.

If it be objected that posts thus set will heave by frost, we think this no more likely than when set in the soil unprotected. The cement will rise and sink with the rest of the soil. For iron rods, *perhaps*—and we only throw it out suggestively—the holes might be dug, wooden pins, the merest trifle larger than the rods, be set in, the concrete poured around, and the pins be drawn out just when the grouting sets, but is not hard enough to prevent their withdrawal. A smooth hole will thus be left to drive the rod through. If the cement stands half an inch above the surface to shed off water, and the soil be dry below, so that water will not collect and freeze the rod to it, the cement collar will rise and settle during freezing and thawing, without moving the rod.

Perhaps the above original suggestions may go a good way toward settling the metal fence post question.* The cement can be used with any form of posts already devised. Round rods five-eighths inch in diameter weigh about one pound to the foot, and those three-fourths inch not quite 1½ lbs. per foot. At 3 cents per pound, a 6½ feet, ¾ inch, round bar, weighing 9½ lbs. will cost 28½ cents; cement say 1½ cents; total, 30 cents. For a five-eighths inch bar, 6½ feet long, 6¾ lbs., 21 to 22 cents, cement included. Any form of bar may be used. A flat bar 6½ feet long, 1 inch wide, half-inch thick, weighs nearly 10 lbs., which, at 3 cents per pound, and 1 cent for cement, would cost 30 to 31 cents per post. If three-eighths inch thick, the weight will be about 7½ lbs., costing 24 cents, including 1½ cents for cement.

Very small Cedar or Locust posts, or of other tough durable wood, can usually be obtained cheaply—as the freight will be light—in many places at 6 or 8 cents each, and one or two cents worth of cement, used as above, will support them firmly. When iron falls to about 2 cents a pound, as it is likely to, we can get effective flat or round bar posts, cement included, for 15 to 20 cents each.

Figs. **32, 33.**—R. H. Mong, of Delaware Co., Ind., sends us sketches of several forms of posts, from which we select the following two: Figure 32 shows a bar of round iron, ⅝ or ¾ inch in diameter. The lower end is bent at right angles to form an imperfect ring, say 4 inches in diameter, which will lie flat upon the bottom of a hole, dug, or better bored with a post auger. A flat stone is laid upon this ring or base, and the earth packed in firmly, using small stones or gravel if accessible. A small bar, however strongly anchored at the bottom, will not be held firmly by the ordinary surface soil. Unless small stones are at hand to pack around it, hydraulic cement, described elsewhere, or some other support, will be necessary. The running wires can be attached to the upright bar by notches, filed or struck in with a cold chisel at the points where the wires pass, and fastening them with a binding wire twisted on. With the cement collar, probably ⅝-inch rods will answer for ordinary fence, or better, ¾-inch. The size of the ring, and the depth of the base in the ground, will depend entirely upon the firmness of

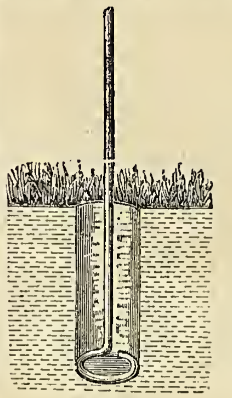


Fig. 32.

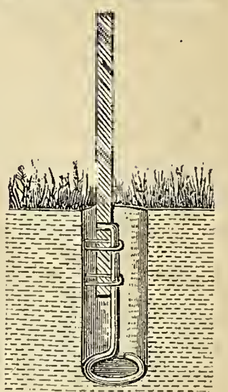
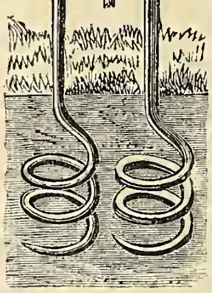


Fig. 33.

the soil. In compact soil, with cement collar, one foot deep may answer. Allowing two feet for the ground portion, including the ring, and 4½ feet above ground, 6½ feet of bar will be needed. This will weigh, for ¾-inch diameter, about 9½ lbs., and for ⅝-inch, about 6¾ lbs. At 3 cents per lb., the ¾-inch rod, 6½ feet long, would cost about 28½ cents, and the ⅝-inch for 20½ cents....Figure 33 has the same underground base, but its upper end is bent at right angles to pass through an auger hole in a wooden piece 2 inches square or larger. It is fastened to the ground bar with two staples as shown. This is cheaper than the all iron post, but the wooden bar will of course decay in time, unless specially prepared, and it will not be fire-proof. (The artist erred in showing the wood part in the ground; it is to be kept entirely above the surface).

No. **34.**—Herr Peter Werner, of Worthington, Iowa, sends a sketch, and suggests that iron rods, sharpened at the lower end, may be bent readily into the form of a screw, as shown in *M*, or any shape desired, and worked into the soil by turning them, which may be done with a blacksmith's tongs, or large wrench. The upper end may be bent like *O* in the engraving, and an iron rod put in to turn them into the soil. The coils standing transversely will strongly support the portion above ground. Such posts may be of round iron rods, *M*, or flattened bars, *N*, and these may be of any desired size, strength, and weight.



No. 34.

Nos. **35, 36.**—C. D. Roberts of Sherman, Wyoming Territory, sends us a description of a fence considerably used with and without wire for Cattle Ranches, especially when small trees or poles are plentiful, but heavier timber for posts and boards scarce. Mr. R. says, "It turns the wildest cattle, and holds the smallest lamb." It is also portable, and can be taken down and moved if desired. The base, fig. 35, is the split half of a larger pole or small log, of any desired length, in which two auger holes are bored near the middle, a little distance apart. Into these, two upright poles say 2 inches in diameter are set. The small poles for the running

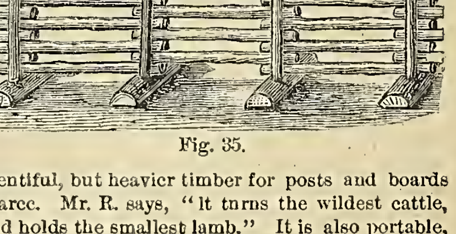


Fig. 35.

*N. B.—The above described methods seem to be so valuable, that we have applied for Letters Patent, to prevent any other parties from taking out patents, as we understand they would have power to do, if not forestalled—and thus prevent their use by our readers.

fence are laid in between, the spaces left being of the thickness of the poles. The tops of the uprights are bonnd together with wire or pieces of old iron hoops. Flat stones or billets of wood placed under the base pieces will keep them from the ground and save decay. The distance apart of the base pieces will depend upon the length and strength of the poles available. No. 36 is the ar-

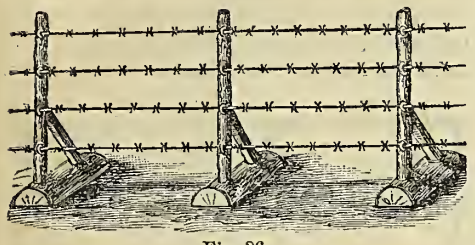


Fig. 36.

rangement for *wire*, plain or barbed, having only one upright of durable *wood*, and somewhat stronger than when two are used. A brace piece is firmly fastened with heavy nails upon one side. Any kind of plain or barbed wire can be used on these stakes.

Experience with Barbed Wire.

FROM A MISSOURI CORRESPONDENT.

N. B. Shearer, Clinton Co., Mo., writes to the *American Agriculturist* that he is not interested in the manufacture or sale of barbed wire, and says: ".... Four years ago I put np one wire above four boards for a neighbor, and one wire above five boards the following year. He told me a short time ago that no stock ever troubled those fences. Two years ago I put up forty rods for myself, joining my neighbor's pasture, using three slats at the bottom for hogs, and three wires above. He has a span of young mules that would jnmp an ordinary fence, and they tried those wires long enough for one of them to get an car torn about an inch. Since then those mules are careful not to touch that fence. I was so well pleased with its needing no attention, that this spring I have pnt up 115 rods, using two planks at the bottom, and three wires above; I set my posts 16 feet apart, and drove a short stake at the center of the planks, leaving it high enough to reach the lower wire. I put the lower plank four inches above the gronnd, left a four inch crack between the planks, and put the lower wire five inches above the planks, with one foot openings between the wires. It makes a good fence. There is a good deal of wire used about here for the npper part of fences, bnt it is pretty well agreed that it needs planks or slats at the bottom. A good deal is built with three planks and two wires. Once in a while I hear of a steer or horse getting hnrt, not because they don't see the wire, but because they are used to breaking over other fences, and they try the wire once, bnt never the second time. I don't think iron posts will be used here for some time, as White or Burr Oak posts can be had for 10 to 12 cts. each.

"My method of straining the wire is to fasten one end, and unroll the strand the whole length of the fence then, with a rail or pole, 10 or 12 feet long, I wind the wire around the pole, about two feet from one end, and with that end catch on to the post, and taking the other end walk around. By the time I get the wire fast to the posts, the nnevenness of the ground makes it tant. Barbed wire is nniversally liked here, nearly every one making a new fence puts on some wire. Some would rather have three boards with two wires; others prefer two planks with three wires. It is pretty well agreed that it wants some wire to tnrn cattle."

DR. HORNE ON BARBED FENCES.

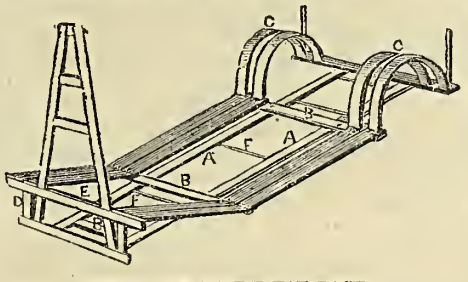
Dr. Wm. Horne, Veterinary Surgeon, Janesville, Wis., in a letter to the "Country Gentleman" writes: "Unqnestionably the barbed wire fence has important qnalities to recommend it. It is cheap in first cost, and quite serviceable. It is easily put up and easily kept good. It looks well and does not harbor vermin. This is all well enough, but there are more serions objections. It is unquestionably the most dangerous and cruel fence ever invented. As now put up, it is a murderous, treacherous snare, and inflicts much suffering upon our domestic animals. I am quite in a position to know whereof I speak. I have seen nnmbers of young colts literally torn to pieces. One fine filly I saw with her throat cut, by being tangled in the barbed wire and struggling to get free. I have seen several with the joints literally sundered by this wire. I have seen a fine mare with her fore feet nearly sawed off. Many of these, and others, were my own patients. Some of them recovered fully, having only a few scars. Many of them were ruined for life. Sheep seem to be the next greatest sufferers from this fence. Many of them have been fearfully mangled and torn. Cows and swine do better. Cattle are much slower animals, and much tougher skinned; still I have seen some cattle badly torn and mangled. Pigs are very cunning, and not much liable to be seriously hurt. Lambs and calves suffer a good deal.

"In its present general construction, the barb wire fence comes under the law for the prevention of cruelty to animals, and it would be a simple matter to make an action lie, if properly managed.—The question is, whether we shall do away with this economical, useful fence, which is of so much value to the treeless farmer out of reach of the lumber market, or so far away as to preclude the possibility of wood fencing. I think not. Surely we can devise some modification of the evils following the nse of this fence. I hope our intelligent stock-men will try and hit on some method which will do away with the objections to this useful fence."

Our first strong prejudice against Barbed-wire fences was gathered at Lincoln, Neb., and confirmed afterwards at Beloit, Wis., not far from Janesville. It was there that we first met with the Brinkerhoff steel strap, which, with the modified barbs we suggested several months ago, we still believe to be the most desirable fence. This is shown in No. 20 of our January number. But there seems to be some hitch in bringing it into the general market.

A Home-made Hay Rack.

It is now the time when everything should be put in order for the haying season, which, with all its hurry, will soon be upon us. Among other things, a good substantial Hay Rack, or "Hay-Rigging," as it is often called, if not already at hand, should be snpplied; and this the farmer can do himself. The engraving is of one that the writer has used for years, and finds it in all respects satisfactory. In

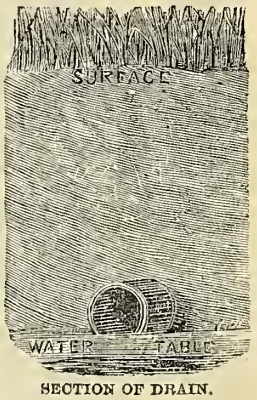


CHEAP AND HANDY HAY RACK.

its construction two bed-pieces, *A*, *A*, are required, these run the whole length of the rack, about 16 feet, and rest upon the bolsters of the wagon. Oak scantling or plank may be used; but a lighter wood is better if made sufficiently large. In the one referred to, a white-wood log, 9 inches in diameter, was used; this was split in halves, the curved or sap-wood side being placed outward, with notches cut in it, to make a close fit with the stakes, and thus keep the rack from sliding. Three cross-pieces, *B*, *B*, of 3 by 3 scantling, and 8 feet long, are spiked upon the bed-pieces in notches made to receive them, and in the places shown in the engraving. Between the two rear cross-pieces, two heavy "hoops," *C*, *C*, pass over on a curve to keep the hay from falling upon the wheel below. The hoops are made from young hickory trees, 3 or 4 inches through, split in the middle, and bent to the proper shape. The ends are securely fastened in D-shaped holes in the cross-pieces. Inch boards abont a foot in width are placed npon the middle cross-pieces, and form the "wings" of the rack. These boards are level. In the front, short standards rise from the ends of the bed-pieces, *A*, *A*, which are joined by the short cross-piece, *B*. The short standards, *D*, carry the cross-piece, *E*, which is a foot or so above the bed-piece—the distance to be determined by the size of the front wheels. Upon this raised cross-piece, and running back in a slanting direction, are two boards, like those in the middle of the rack—but being raised in front they keep the hay from the wheels below them. To complete the rack, a "ladder" is put at the front; this consists of two stout pieces bolted to the inner sides of the ends of the bed-pieces, and approaching each other as they pass upward, are united by an occasional cross-bar. This ladder serves as a guide in loading, gives a place to fasten the reins, and is a means of getting off or on the load. Two pins 20 inches long are set upright in the rear corners of the rack, to keep the first forkfuls from sliding off. With a nnmber of small bars, *F*, *F*, between the bed-pieces to hold the floor boards, the rack is ready to be put upon the wagon.

How Does the Water Enter a Tile-Drain?

It is generally supposed that the pores in drain-tiles admit the water; but they do not; if they did they would as capillary tubes transmit it very slowly. The ends of the tiles are not perfectly smooth, and when they are placed in as close contact as possible, do not make a water-tight joint. Let us suppose the conditions to be reversed, and we undertake to convey water to a distance in a pipe made of tiles laid as closely together as possible. Any one at all familiar with such matters will at once say that the water will leak out at the joints in passing through such a pipe for but a short distance. The manner in which the water in such a case would go *out*, allows us to readily understand how it really goes *in*—it passes through the joints, and will enter as readily as it would leak out. Water always enters a tile or other drain from the bottom. The surface of the water, as it stands in the soil, is called the "water-table," as seen in the engraving. When during a rain water falls upon the surface, it at once soaks into the soil, passing by gravitation directly downward, until it reaches the standing water representing the water-table. The water in the soil then rises until the water-table cuts the line of the tiles, *leaking in* at the joints, when it begins to run off through the drain. If the water-table rises until it reaches the tops of the tiles, the drain will then run full, and the water will continue to run off by the drain until the water-table falls again to its bottom.



SECTION OF DRAIN.

As to the amount of water which will enter at each joint, Gisborne, on the authority of Parkes, of high reputation as a draining engineer, says: "If an acre of land be intersected with parallel drains 12 yards apart, and if on that acre should fall the very unusual quantity of 1 inch of rain in 12 hours, in order that every drop of this rain may be discharged by the drains in forty-eight (48) hours from the commencement of the rain—(and in a less period that qnantity neither will, nor is it desirable that it should, filter through an agricultural soil)—the interval between two pipes will be called upon to pass two-thirds of a table-spoonful of water per minute, and no more." Porous tiles are not desirable, as they can aid but little, if any, in the flow of water; they are not so durable, readily crumbling to pieces when exposed to frost, which in ordinary seasons reaches them at the outlets, and in extraordinarily cold spells may act upon them in the soil at the depth of two and a half or three feet. Tile-drains are often spoiled by leaving too open joints between the tiles, under the impression that the water can not otherwise get into the drain. In fact, the joints must be laid closely, otherwise the fine soil, or "silt," as it is termed, will wash in and in time so accumulate as to stop up the drain.

A Country House, Costing $1,500.

BY S. B. REED, ARCHITECT.

This design somewhat resembles the one given last month. The main part is raised to two full stories; the floor dimensions are reduced, and the whole is less expensive. It is believed to contain more than an average amount of accommodation for a dwelling of this cost, and to be very conveniently arranged.....**Exterior** (fig. 1).—The breadth of the front is 37 feet, and the extreme depth, 30 feet. The foundation shows 2½ feet above ground. The inclosing is of horizontal boarding for the first story, and shingles above, with a belt course of dentil work between. Of course the whole may be covered with the ordinary narrow clap-boards, or the "Novelty" siding. There are two pleasant Verandas, front and rear. The Bay Window projecting in front of the main part is square-sided, instead of the usual semi-octagonal, and has balcony finish above....**Cellar** (fig. 2).—Hight of ceilings, 6½ feet; extends under the whole building. Four small windows are arranged to furnish light to all parts. The outside entrance is from the rear, and a stairway leads to the kitchen. ....**First Story** (fig. 3).—Hight of ceiling, 10 feet. The Hall is entered from both front and rear verandas, and doors lead to the parlor, sitting-room, and kitchen. The principal flight of stairs lead from this to the second story. The Parlor is square, with a front bay window or alcove, arched across on the inside. A plain window is placed at the center of one side. A mantel, not indicated in the cut, is put opposite the bay window. A door leads to the rear room, which may be used either as a sitting-room or a family bed-room. It has two windows, an open fire-place, and a closet. [This room may be used as a Dining-room, though this would involve much carrying of dishes and food, and that too, across the main hall, unless a door be provided from the rear veranda to the sitting-room, and the veranda enclosed with glass for cold and stormy weather. The plan might be modified by cutting another room, for a library or bed-room, from the front of the kitchen, and let the kitchen occupy a portion of the rear part now provided, and also the rear veranda, and part of the rear of the main hall.]—The Kitchen is really the pleasantest room in the house. In this the family spend very much of their in-door life together, and special efforts are made to render this apartment as cheerful as possible, by giving it a favorable position with good outside views, and where it shall be well sheltered from storms, and shaded from the direct rays of the sun. It is of fair size, with front, rear, and side windows, a large open fire-place, and a 5 by 6 feet pantry. A pump and sink (not shown on the plan) are placed between the fire-place and pantry, under the window. The stairs to the cellar is under the main flight. An outside door opens to the rear veranda.....

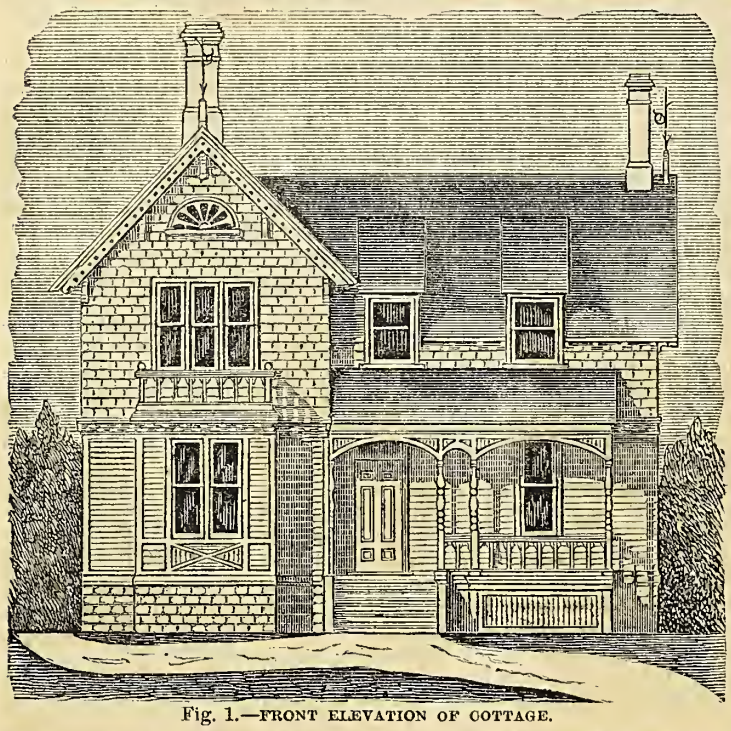


Fig. 1.—FRONT ELEVATION OF COTTAGE.

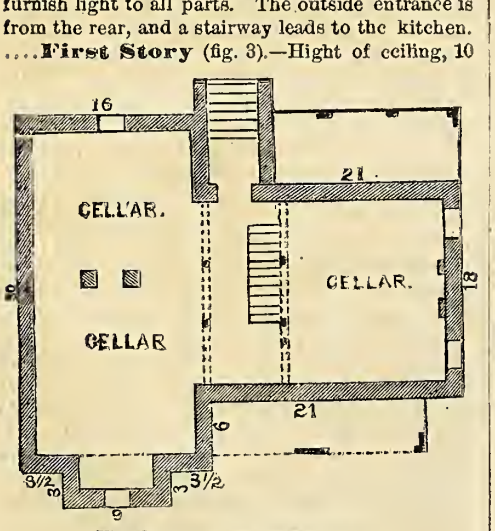


Fig. 2.—PLAN OF THE CELLAR.

Second Story (fig. 4).—Hight of ceiling in the main house, 9 feet, and in the wing 4 feet at the sides, and following the roof to the full hight of 8 feet. This story contains a hall, five rooms, and two closets. If desired, the rear wing room (6 by 14 ft.) may be furnished and used as a bath-room, with water pipes direct from the sink and pump below....**Construction.**—The foundations are of broken stone and mortar, 18 inches thick and 6½ feet high, 2½ feet of which show above ground, all neatly pointed where exposed to sight on the outside. The walls may be of brick where stone are not at hand, at a small additional cost, say $15 to $20. Chimneys are of brick, laid in the usual manner. The kitchen fire-place is arched to the hight of 5 feet. Frame of sawed spruce, of sizes shown in the estimate below, all thoroughly framed and secured with hard-wood pins. The entire sides of the frame-work are sheathed with rough selected boarding of even thickness. The siding is of 6-inch wide clear pine clap-boards to the hight of the belt course. Above this course the sides are shingled [or otherwise, as above stated]. The Roofs and Verandas are shingle covered. The Valleys, Gutters, and Leaders are tinned. All exposed timber on the verandas is dressed and chamfered. Flooring for verandas of narrow white pine, and for the inside of wide spruce. Marble Shelves are put in each of the principal rooms. Plastering: white hard-finish on two coats of brown mortar. Painting: two coats inside and out of any desired shade...**Estimate.**—It being impracticable to follow the constantly changing prices, the items of cost are made at a uniform standard with those given in our more recent estimates.

94 yards excavation, at 25 cents a yard			$ 23 50
50 perches stone foundation, at $2.75 per perch			137 50
4,000 Brick, in chimneys (laid), at $12 per M			48 00
560 yards Plastering, at 25c. per yard			140 00
3,000 feet of Timber, at $15 per 1,000, viz.			45 00
2 Sills,	4x8 in. 30 ft. long.	2 Ties,	4x6 in. 30 ft. long.
2 Sills,	4x8 in. 22 ft. long.	1 Tie,	4x6 in. 18 ft. long.
1 Sill,	4x8 in. 18 ft. long.	2 Ties,	4x6 in. 22 ft. long.
2 Sills,	4x8 in. 16 ft. long.	4 Ties	4x6 in. 16 ft. long.
7 Posts,	4x7 in. 20 ft. long.	2 Plates,	4x6 in. 30 ft. long.
2 Posts,	4x7 in. 15 ft. long.	2 Plates,	4x6 in. 22 ft. long.
1 Girder,	4x8 in. 18 ft. long.	28 Beams,	3x8 in. 16 ft. long.
1 Veranda,	3x8 in. 88 ft. long.	18 Beams,	3x8 in. 22 ft. long.
1 Ridge,	2x6 in. 62 ft. long.		
100 Joists, at 15c., $15.00; 250 Wall Strips, at 12c., $30..			45 00
325 Shingling Lath, at 6c			19 50
55 bunches Shingles, at $1.25			68 75
250 Sheathing, at 25c., $62.50; 450 Siding, at 12c., $51.60			114 10
Cornice materials, $23; Veranda, finished, $30			53 00
87 Flooring boards for Veranda, at 25c. each			9 25
185 Flooring boards for inside, at 28c. each			51 80
4 Windows, cellar (complete), at $3 each			12 00
17 Windows, plain (complete), at $7 each			119 00
3 Windows, dormer (complete), at $10 each			30 00
17 Doors (complete), at $6 each			102 00
Stairs			35 00
240 feet of Valley, Gutters, and Leaders, at 8c. per ft.			19 20
6 Marble Mantel Shelves			22 00
Closet, finished, $10; Nails, 300 lbs., $12			22 00
Painting, $110.00; Carting, $15.00			125 00
Carpenter's labor (not included above)			150 00
Pump, Sink, and Incidentals			103 40
Total cost			$1,500 00

The Wire Age.—We are told that the world has passed through a *stone*, *brass*, and *iron* age, etc.; and it now seems as if it had arrived at the *wire* age.

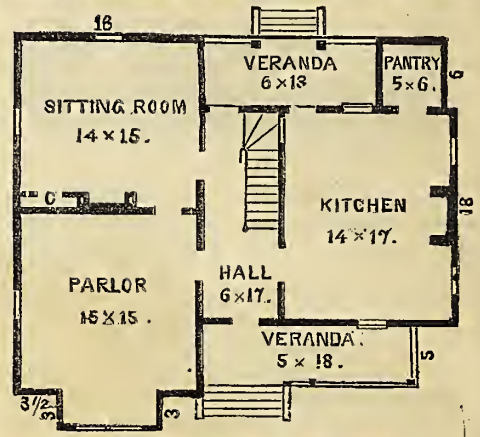


Fig. 3.—PLAN OF THE FIRST STORY.

In coming up the streets of a city, the first and the last thing to be seen, is a wire running—the mind only wonders where! Some one has aptly likened the interlacing wires in a city like New York, to the work of some giant spider, which has covered the streets and houses with a net-work of iron webs. But wires are not for city use alone. There are many times on the farm, when a piece of wire might prove of great service. There are other places than in a pig's nose, where, if a bit of wire was used, much trouble might be saved. Things will break, and there is nothing better for mending than wire. A piece of harness, or a part of the wagon, harrow, cultivator, etc., may come apart at just the wrong time, and nothing will so easily mend matters as a piece of wire, if it is at hand. We keep in our work-shop, a large spool (in fact two, for different sizes) of copper wire, which comes in play so often, that it is looked upon as one of the essential things in the outfit of the shop, and we commend it to every farmer, as one of the greatest of little conveniences. A small coil or spool of such wire, should be kept in the work-coat pocket; it will save a vast deal of going to the house for repairs, and be one way of saving money. One should never start on a journey, whether for several days, or only a few miles, without a coil of wire under the seat, or in some corner or part of the buggy or farm wagon. Thus provided, one has the means of repairing almost every minor damage to harness or vehicle. In the matter of wires, the country should not be out-done by the city. If it be "An age of wire," it should be so everywhere alike....Since the above was in type, an Oriole's or Hang-bird's nest is reported which the birds built near a mechanic's shop, and had securely fastened it to the branch of the tree by means of pieces of wire which were found by the thoughtful birds in the sweepings of the shop.

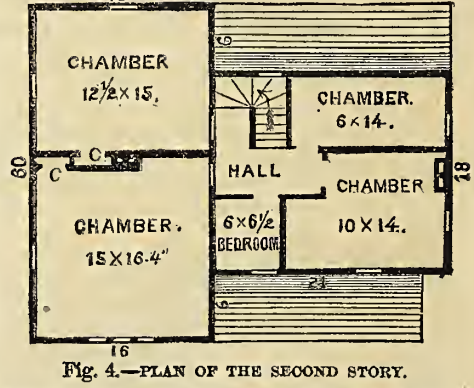


Fig. 4.—PLAN OF THE SECOND STORY.

The Jersey Belle of Scituate.

The most famous living butter cow *to-day* is "Jersey Belle of Scituate," the property of Mr. C. O. Ellms, of Scituate, Mass., dropped in 1871, and bred by Mr. E. D. Sohier. She is now nine years old, or will be on the 10th of next month (July). She is a beautiful cow of a rich-yellow-fawn color, shading into a darker tint upon the head, diversified and mapped out with considerable white. She is above medium size, weighing 950 pounds when in her best condition, and really represents exactly such an animal in appearance, as well as characteristics, as may be, and frequently is, produced by the direct cross of the Guernsey and Jersey breeds. One of the best uses, by the way, to which inferior or unregistered animals of either Guernsey or Jersey blood can be put is to mingle their blood. Cross-breeds develop, with great uniformity, the excellencies of both of the parent breeds. In the case of "Jersey Belle of Scituate," it is a question, which probably can never meet with a solution—how much of her rare qualities does she, or does she not, owe to a remote Guernsey cross? Her butter is of as rich a color, and very much the texture and degree of firmness (or rather lack of firmness when compared with average Jersey butter) as the highest colored Guernsey product, and this high color is held throughout the winter. The engraving we give is a faithful copy of an admirable photograph.

The Ellms' cow we have said is *to-day* the most famous butter cow *living*. We mean to intimate that she holds that position only until some rival shall be fully attested to yield more than 22 pounds 13 ounces of butter in a week, or more than 705 pounds in a year. Some cow will surely do this within a year or two, so that unless this wonderful cow excels her own record, she will be forced to accept a second or even a lower place.

Mr. Darling's "Eurotas" yielded within an ounce a day of the highest weekly yield of "Jersey Belle of Scituate" during one tested week last year. This year so far she has not done quite so well, but is making a high average. When the Ellms' cow became famous she was unregistered, but believed to be perfectly pure. Many of her ancestry had been recorded in the American Jersey herd-book. Her dam, "Jennie," 7827, was then unregistered; her granddam, imported "Fannie," 7823, was unregistered. So were her sire, "Victor," 3550—who was also the sire of "Jennie" above named—his sire "Pilot," 3549, and dam, "Minnie," 7826. "Pilot's" dam also, "Nellie," 7825, and her dam, "Dove," 7824, were neither of them registered. To secure therefore the registration of this one cow, it was necessary to register seven other animals, one of which was in the sixth generation. We have in the pedigree of this cow several instances of close in-breeding. Stated in the ordinary form, giving the dam's line, it is as follows: "Jersey Belle of Scituate," 7828, by "Victor," 3550; dam, "Jennie," 7827, by "Victor," 3585; g. dam, "*Minnie*," 7823. imported in 1860. "Jennie" and her famous daughter were therefore by the same sire, while "Victor's" sire, "Pilot," and dam, "Minnie," were very closely bred, one being by "Dick Swiveler," and the other by "Dick Swiveler, Jr.;" besides, "Pilot's" dam, "Nellie," was by "Czar," and her dam, "Dove," also by "Czar," and out of imported "Duchess," 548, the dam of "Minnie" before mentioned. We give here the pedigree in full, im-

THE FAMOUS COW "JERSEY BELLE OF SCITUATE", 7828.

The Pedigree of Jersey Belle of Scituate, 7828

- Victor, 3550
  - Pilot, 3549.
    - Dick Swiveler, jr., 276
      - Dick Swiveler, 74...
        - Major, 75.....
          - *Colonel*, 76....
          - *Countess*, 114..
        - *Flora*, 113.....
      - *Twilight*, 977.....
    - Nellie, 7825.....
      - *Czar*, 273.....
      - Dove, 7824.....
        - *Czar*, 273.....
        - *Duchess*, 548.....
  - Minnie, 7826
    - Dick Swiveler, 74...
      - Major, 75.....
        - *Colonel*, 76.....
        - *Countess*, 114.....
      - *Flora*, 113.....
    - *Duchess*, 548.....
- Jennie, 7827
  - Victor, 3550
    - Pilot, 3549.....
      - Dick Swiveler, jr., 276
        - Dick Swiveler, 74
          - Major, 75.....
            - *Colonel*, 76.
            - *Countess*, 114.
          - *Flora*, 113.....
        - *Twilight*, 977.....
      - Nellie, 7825.....
        - *Czar*, 273.....
        - Dove, 7824.....
          - *Czar*, 273.....
          - *Duchess*, 548..
    - Minnie, 7826.....
      - Dick Swiveler, 74...
        - *Colonel*, 76....
        - *Countess*, 114.
      - *Duchess*, 548.....
  - *Fannie*, 7823

ported animals in *italic*. Breeders of cows in this country are putting in practice the lessons in close breeding thus forced upon them, and we mistake if within the next ten years greater progress will not be made in "butter breeding" than ever. There is, of

course, no evidence that "Jersey Belle of Scituate" has a drop of Guernsey blood in her veins. Yet we find in her, as in many cows upon the Island of Jersey, strong Guernsey characteristics. The fact being perfectly well known that Guernseys have frequently been, and may perhaps even now be, brought from the sister island to Jersey for breeding purposes, and it is fair to assume that this cow has, and is benefited by, some of their golden blood.

A Handy Wool-Box.

The use of some contrivance in packing wool, that will make the fleece more presentable in shape, and safer to handle, is of importance, especially if the flock is large and the device is one that lessens the labor of doing up the wool. The Wool-box, as such aids are called, here presented, has been used by the writer so satisfactorily, and he can recommend it to others. It consists of a table made of three boards of sufficient length and width to allow of the spreading of the largest fleece. The boards are united by hinges, as shown in figure 1, so that the side ones may be turned up to form the box, as seen in figure 2. The width of the middle board

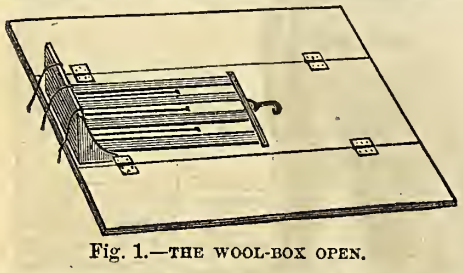


Fig. 1.—THE WOOL-BOX OPEN.

determines the length of the roll. At one end of the middle board is fixed an upright piece, broad at the bottom and thin at the top, the inner side of which is concave, to fit the curved surface of the finished roll. In the upper edge of this front piece three notches are sawed, in which are held as many ends of balls of wool twine. Each twine runs from this attachment along the bottom of the box, to holes in the bottom board, near its middle. The balls are held in a basket below the table. A compound pressure-strap is made of four heavy straps of leather—we used old tugs split in two—and tacked to the bottom board near the base of the front standard, and united at the opposite end by a small rod of iron carrying a small hook, the latter fastening into a hole in the bottom board. The straps are a short distance apart, and the twines are below the open spaces. There is a lever fastened at the bottom of the table and running out in front into an eye, to which the hook of the pressure-strap is fastened when the fleece is to be pressed.

Figure 2 shows the method of using this Wool-box. After the wool has been brought into shape by the hands, and the sides of the table turned up

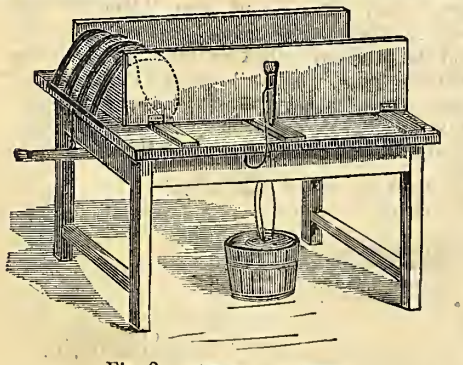


Fig. 2.—THE BOX CLOSED.

perpendicularly and secured by pins, the wool is pressed into a loose roll, when the pressure-strap is brought over the fleece and the hook fastened into the eye of the raised lever. The lever is pushed down with the foot, and the strings brought up and tied between the straps, when the work is done. From experience we know that this Box is a very handy one, and with it a person can do up the fleeces much faster and better than when done simply by hand. With wool as with other products of the farm, the highest price is obtained, other things being equal, when it looks the best, and this device, which any one can make and use, is a labor-saving one that turns out good, closely packed fleeces of pleasing appearance in the market.

Among the Farmers.—No. 53.

BY ONE OF THEM.

My recent wanderings have taken me among the herds of five or six good breeders, and I have been strongly impressed by one fact, which is not by any means a new one, viz., that

The Bull is Half the Herd.

I went down to Oceanic, N. J., on the Shrewsbury River, to see Dr. Ehrick Parmly's herd of Jerseys. He inherits a fine old place. I don't know its history, but presume it was built by some old sea captain, grown rich upon the sea, and so loving the rolling waves, he had seen so much, that he wanted to live ever within the sound of their roar.

The Jerseys.

There have been several good Jersey breeders in this vicinity, and prominent among them was Robt. L. Maitland, who imported some of the best blood that ever came into the country. Charles Carow also imported some animals which proved very good. Dr. Van Buren, and E. Delafield Smith, have each had excellent herds, and brought famous blood into the vicinity. Dr. Parmly's herd was simply a useful one, there were no "fancy" cows in it; no very beautiful ones. A breeder would call them "good plain things." Two years ago, he exercised most excellent judgment, in placing at the head of his herd, "Prince of Scituate." His dam is "Belle of Scituate," and his grand dam "Jersey Belle of Scituate," the most famous Jersey cow in the world. She was famous then, but not so renowned as now.

The bull is a beauty. His color is yellowish fawn running into gray, with considerable white. A beautiful head, full eye, neat incurved horns, but like daggers. His back is level, his body deep, his flank very deep, his neck light, tail fine, loin broad, and rump bones wide apart; great length from hips to rump, and from rump to hocks. He is low set and fine limbed, with a hide as soft and silky to appearance, as that of a well groomed horse. But I did not handle him. He was loose in the yard with the cows, and clearly "monarch of all he surveyed," when strangers were about and took liberties. He had a playful way with him, which did not seem vicious, yet I would not like to offer myself as a plaything for him. I think I would rather have had him play with Mr. John D. Wing, who was present, or with almost anybody else. There is a beautiful

Flock of Yearlings,

daughters of "Prince of Scituate"; last summer's calves coming a year old. These look as much alike as their dams are dissimilar; as to color, their hues vary. They are bright, upheaded, gentle things of excellent form and promise in every respect, generally large teated, with good escutcheons, and though deep-bodied, straight, fair limbed, graceful, and deer-like, and withal of high quality.

The Doctor may well be proud of his bull and of his get, for now he has the foundation laid for a superior breed, and in this case I certainly would say that the bull is sure to prove three-quarters of the herd. Not that the cows are not good. They are, but they lack style, and breeding, and that show of "quality," which, as it is present or wanting, is equally marked in beasts as in mankind.

A few days after, I had an errand which took me to Patterson, Putnam Co., N. Y., where I saw the

Herd of Mr. R. C. Paterson.

This was selected with care, and comparatively high prices were paid. The cows are largely of the Bronx and Bashan family, in fact, this is the only herd I know of where this blood preponderates. They are generally above medium sized, with large bodies, large udders and teats, and are very large milkers for Jerseys. Many are solid colored, and they have a uniform look, which is desirable in any herd. The farm is in one of the best milk-producing sections of the State—the head of the Valley of the Croton River—and Mr. Paterson's ambition has been, of course, not to have his Jerseys esteemed as poor milkers by his neighbors—to whom milk (quantity) is everything. He has so far succeeded that he openly challenges any of the neighboring herds to show as good an average. While as to quality, without making any intentional tests, he finds that his record of butter actually made and weighed, averages about 250 pounds a year for each cow. His bull is "Mopsus," now an old fellow, but of excellent form, and of that solid dark brown, shading into gray, with the darker shades nearly black, which is a favorite color with many. He is of an excellent milking strain, and his calves are much like him, solid, with black points, the darker colors predominating. Here I would certainly say that "the bull is half the herd." There is a very fair blending of the characteristics of sire and dam, so that a casual observer would hardly venture to give the preponderance to either parent.

Not very far from Mr. Paterson's place are the

Norfolk Red Polled Cattle

of Mr. G. F. Taber. There are about 40 of them, and though there is so great a similarity in all the animals of the breed, yet any one can see that, while there are marked differences among the imported cows, some being low set, broad and deep; others are much taller, and differing more or less in all their points when examined critically. Among the young stock no such divergence from the normal standard exists, and this to a great extent I would attribute to their sire. It is an old idea that the young animal as a rule receives from its sire, as regards physique, *external character*, and from the dam those qualities which more directly affect its life, and hence are called *vital characteristics*. If this be true, it is not to be wondered at, that in looks—that is in externals, a good bull would mark his offspring so as to occasion a strong similarity. But it is supposed that the nervous organization is derived especially from the sire. Hence docility, gentleness, intelligence, confidence in his friends, are traits, which, existing in the bull, one would expect to see reflected in his get.

Mr. Taber was absent when we arrived, and having permission to examine the Norfolks, we did so, and found the old bull, so quiet and peaceable as to permit himself to be handled by entire strangers, while the younger one—a three-year old—was throughout vicious, yet timorous and nervous to a high degree. Their calves possessed the same traits, though treated identically alike.

I don't know how familiar the readers of the *American Agriculturist* are with this admirable breed, and so I give a brief description. Suppose heavy low set Ayrshires to have the color of Devons, uniformly, that is, mahogany red, or between the red of cherry wood and old mahogany, with big udders, as they (the Ayrshires) usually have, but with big teats, which the Ayrshires usually have not, and with better beef points—that is, deeper in the flank and brisket, fuller in crops and loin, and better let down in the twist,—and withal hornless, and a very fair idea may be had of the Improved Norfolks. They are excellent milkers, have large calves, which are easily fattened, and they have proved, with Mr. Taber, very hardy and healthy. He sells his milk, so that I do not know what the herd would do put to the butter tests. If they resemble the Devons in this, as they do in so many other points, they will be found to excel. It was a fine herd.

A few days later, and last in order of time, I had the pleasure of visiting for a short time the

Jersey Herd of Mr. Horatio Parke Kretchmar.

Mr. Kretchmar is a nephew of that excellent breeder, the late Horatio S. Parke, whose sudden death a year ago cast a deep gloom upon a large circle of friends. He has much of his uncle's love for cattle, and enthusiasm in breeding them, and as the honored name, the tastes, and the fine herd are now his, we may look with confidence to its continuance as one of the best herds in the country.

Early in the Centennial year I went out to the Channel Islands to buy cattle, and had a commission from Mr. Parke to buy the best bull I could—answering certain conditions, which indeed were so accurately stated, that he may fairly be said to have selected the bull and not I. We were, however, so

well in accord in our views, and so thoroughly understood one another that knowing so exactly what he wanted, I was under no temptation to exercise the right of private judgment. Happily I found an animal—a yearling—so near the standard that I could only hope that he would not grow away from it before Mr. Parke had the opportunity to confirm my judgment, which in time he did. It was a pleasure the other day to see the mature bull, the sire of as beautiful and uniform a lot of young things as one ever sees in a herd, more than fulfilling in his full age the promise of his youth.

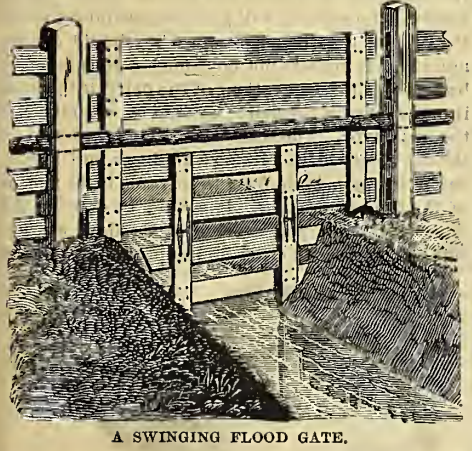
Mr. Kretchmar has one famous cow in his herd,

"Annie Page,"

She is by a son of "Alphea" (the last calf of his famous dam,) who stood for several years at the head of Mr. Parke's herd She was a beautiful heifer, and at eleven months old was found with a fully developed udder distended with milk—and from that time, although she did not calve until ten months after, was regularly milked with the rest of the herd. She developed to be a cow of fully medium size—a deep milker, and extraordinary butter maker, and although tested by Mr. Parke, no memorandums of recent tests can now be found. She will probably be tested again this year. Her daughter, "Annie Gold-dust," by "Jersey Gold-dust," dropped a beautiful heifer calf by the same sire, the day that I made my visit—double "Gold-dust" and "Alphea"—pretty good blood we should say!

Another Flood Gate.

Hard rains will come, and small streams and open ditches that are almost dry one day, may be rushing torrents the next. This makes it a matter of importance to provide a suitable and safe flood gate, at all those places where the farm fences cross such streams or ditches—gates that are easy of construction, permanent, and above all, self-adjusting. Several flood gates have been presented to our readers from time to time, but none like the one shown in the accompanying engraving. It consists of a stout piece of timber—a straight pole will answer—which fits into *round* holes in the fence posts on each side of the ditch. To this bar, which turns readily in the posts that hold it, the gate, or the length of fence, is securely fastened with heavy spikes, or better still, with bolts. On the lower portion of the gate, an addition of short boards, cut to fit the ditch, may be made as shown in the engraving. The whole gate thus constructed, turns readily upon the horizontal bar, the bottom



A SWINGING FLOOD GATE.

swinging out with the water and allowing it to pass, but returning to its former position, so soon as the water subsides. In making this gate, it should be borne in mind that the part below the turning bar, should be a considerable heavier than that above, so that small stock will not try to push their way through; that is, it is to swing only by the application of a strong pressure at the lowest part, as is the case with a rising, rushing stream.

Judging by the Outside.—The surface of an animal can be taken as an index of its health, and feeding powers, with considerable accuracy. An animal that has a long and soft coat of hair, with the skin soft and elastic, though with noticeable firmness when grasped by the finger, is generally one that is healthy, and has a good constitution, and sufficient capacity as a feeder. On the other hand, the harsh, coarse coat, and hard unyielding skin, are found upon slow feeders, and inferior animals. A good judge of stock can pretty well satisfy himself of the quality and value of an animal, by the looks and feeling of the surface.

A Home-made Field Roller.

There are few more useful farm implements than the roller—and there are few, if any, the use of which is more generally neglected. It is one of those implements that may be had with very little

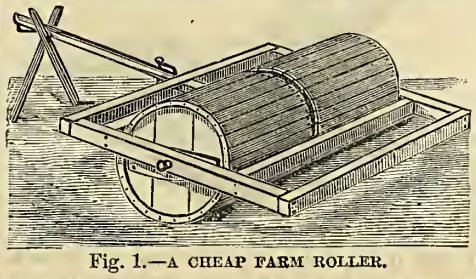


Fig. 1.—A CHEAP FARM ROLLER.

outlay, as it can be made by any farmer who can use ordinary tools. Every field of winter wheat ought to be rolled in the spring so that the plants that the frosts have heaved from the ground may be pressed back into the soil again, and a smooth surface given to the field for the reaper that, in a few months, is to follow. There is no meadow, especially if it is to be mowed with a close cutting machine, but that will be benefited by the passage of a roller over its surface. But besides its value upon the winter crops and meadows, the roller has a more important use upon the newly plowed field, in the breaking down of such clods and lumps that the harrow often fails to touch. Upon a light soil, where there are no clods, the roller is of great utility in compressing the fine particles of earth, thus making it sufficiently compact for the crop to thrive. The use of the roller after sowing seeds of all kinds may often make the difference between the success of a crop and its failure. By bringing the earth in close contact, every good seed will germinate, while without the pressure given by the roller, a large share of the seeds may fail for want of sufficient moisture for germination; or if they do start the germ dries and is killed. Gardeners are well aware of this fact, and in their operations use rollers of a size suited to their work, or beat down the earth with the back of a spade.

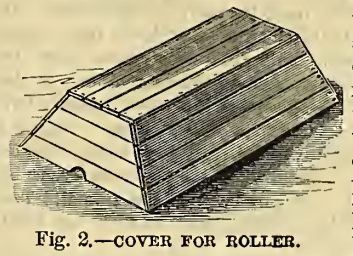


Fig. 2.—COVER FOR ROLLER.

That roller which will most effectually break lumps and do its other work at the least expense, is of course the best; but of the many kinds now in use it is difficult to decide which is the best for all cases. The cheapest, so far as first outlay is concerned, is one made from a log—and the oldest.

Those in which cement is used for the roller, when well made, are lasting and satisfactory, and not expensive. The one which the writer has used for a number of years, was made upon the farm, and entirely by the farmer, except the small amount of iron work which was furnished by the nearest blacksmith at a moderate cost. It is a double roller, of the style shown in figure 1, that is, consisting of two rollers equal in all respects, joined end to end. A roller thus divided is much easier to turn upon the land, as one half turns forward and the other backward in the movement. The "barrel" portion, as the revolving part is called, is about 4 feet long, 3 feet in diameter and consists of two end pieces or "heads" of inch oak, to which the "staves" of narrow 1¼-inch oak stuff are spiked with heavy nails. The axle, which passes through the center of the rollers, is a round bar of 1¼-inch iron and is secured to the frame by close fitting iron boxes. The frame is made of 3 by 4 inch oak scantling firmly mortised together. In front and back, a board is fitted into the frame at the underside of the frame pieces, thus making a long shallow trough, into which stones and other things may be put as picked up while the roller is at work. A cover for the roller, made of inch stuff in the manner shown in figure 2, is an important item if there is no shed under which the roller can be kept when not in use. This cover fits over the body of the roller and rests upon the frame, and is so adjusted that it can remain in position when the roller is in use, but it is best to remove it unless the extra weight which it gives is needed to break the clods. Figure 3 shows the form of seat that may be put upon the roller for the convenience and safety of the driver. It consists of a board of sufficient strength to hold a person, and provided with long legs well braced. This "stool" is then fastened astride the roller in the middle, the lower ends of the legs fitting closely into the front and rear of the roller frame. The front end of the board may be shaped so that the driver may sit astride. The whole cost of a roller thus equipped is not great, and it will last for many years, with proper storing when not in use.

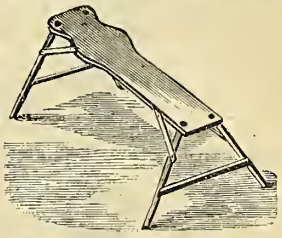
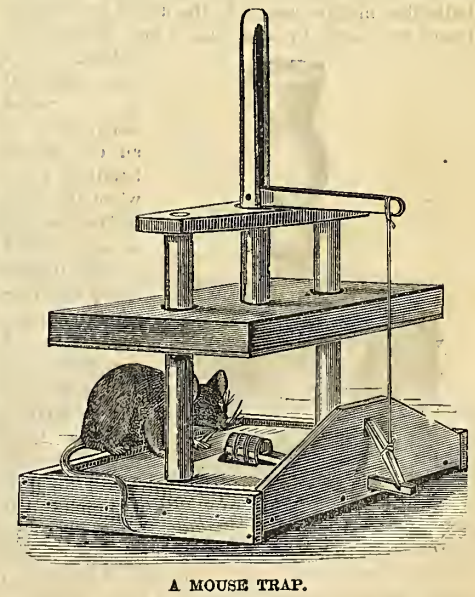


Fig. 3.—SEAT FOR ROLLER.

Another Mouse Trap.

Mice are not the friends of man, and until they change their manner of living, or leave the country, traps to catch them will always be needed. The trap that will capture the greatest number of mice in the shortest space of time, and with the least expense, will be the best. Mr. J. B. Ritze, Franklin Co., Ohio, sends a sample of a trap of his make, which he has used with great success since 1847. It consists of a piece of board, on which two wood standards are placed, and these are united at the top by a short strip of wood. Through this top piece a round stick passes, carrying a heavy hardwood board of the same size as the floor of the trap, and held from whirling about by the standard pins, which pass through holes near the ends. The trap is set by raising the heavy board, and securing it in place by a key, and string, which runs down to the "tumble piece" of a "figure four," on the



A MOUSE TRAP.

outside of the trap. The trap is shown set in the engraving. As the mouse nibbles the cheese fastened on the end of the long stick of the "figure four," the "tumble piece" is thrown out, the key flies up into a slot in the stick, carrying the heavy board, and down comes the latter upon the mouse.

This trap can be made of almost any size, to suit the animal to be caught, and may be useful in taking larger "game" than mice. It is not patented.

The Cabbage Worm.

The most troublesome pest to the Cabbage-grower is the green caterpillar generally known as the "Cabbage Worm." In some localities it has destroyed the entire crop, involving a loss of many thousands of dollars. After one of these visitations a locality will be comparatively free from them for some years, but they are quite sure to be troublesome somewhere every year. As with most other destructive insects, their great increase is accompanied by a still greater increase in their natural enemies, without the aid of which the cultivator would be much less successful in his warfare upon insect pests than he now is. The most destructive natural enemies of insects are other insects; these are often very minute, and some may attack the pest in every stage—egg, caterpillar, pupa, or in the perfect state. Many of them live within, and eventually destroy the host. The Cabbage Worm has several of these parasites, but the cultivator can not wait for them to do the whole work, he must resort to more rapid means when the enemy comes in force. For the aid of those to whom the insect is a new comer, we may say that the worm comes from eggs that are deposited on the under side of the cabbage leaves by a medium sized and rather pretty butterfly, which is white with a few black spots. These Cabbage-butterflies come early in the season, and are sometimes so abundant as to appear like a white cloud over the cabbage field. When such is the case it is evident that something must be done to destroy them or their greedy young, soon following them, will ruin the crop. Every female butterfly killed means the prevention of a multitude of worms and, therefore, a strike at the butterflies is the one that is most destructive. The butterflies may be caught by the use of an ordinary insect net, made by attaching a bag of mosquito netting to a hoop fastened to a round stick, such as an old broom handle. Even when the butterflies are not so numerous as to seem threatening, catching should be persevered in. If the butterflies are neglected and allowed to deposit their eggs, the next best thing is to make war upon the caterpillars; and the earlier this is done the better. The remedies effectively used in the case of the Potato Beetle, namely: Paris Green and London Purple, cannot be employed here, as it would be applying a deadly poison to the edible portion of the plant. The most successful remedy is hot water at about 160°—hot enough to kill the worms and not sufficiently hot to injure the plant. Apply the remedy at once, as the worms soon eat into the forming head.

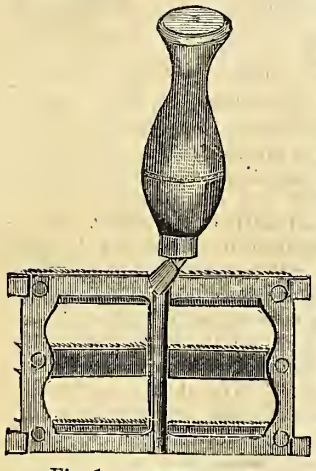


Fig. 1.—COMMON COMB.

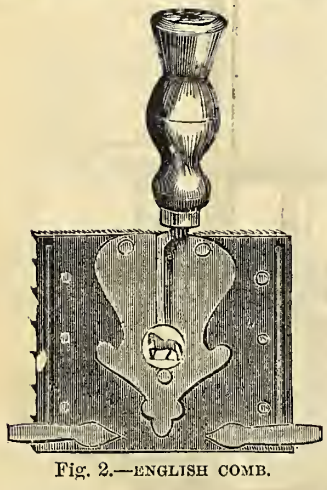


Fig. 2.—ENGLISH COMB.

Curry Combs.

It is not our purpose to treat the subject of curry combs from an historical standpoint, interesting as it might be, but to simply call attention to a few of the forms or styles of combs now in use. A curry comb as it is now made consists, speaking in a general way, of thin bars of metal, arranged in parallel rows, presenting smooth or toothed edges, and provided with a handle of some sort, by means of which it can be grasped by the hand. In figure

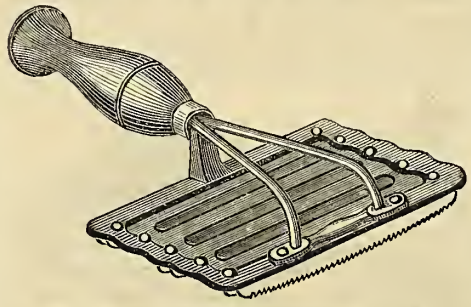


Fig. 3.—HOTCHKISS' "SUPERIOR" COMB.

1, one of the simplest of the modern combs is shown, with six bars all provided with fine-toothed edges. The back is open, and the handle of wood extends from one side, and is joined to the comb by a trowel shank. Combs made in this form are of iron Japanned, iron tinned, and of brass. An English pattern of a solid back comb is shown in figure 2, which is styled "extra heavy." There are eight bars upon the face; and two stout "wings," one on each side, are provided for striking the comb against any object, as the side of the stall, for the purpose of cleaning it. This form of comb is largely used throughout the world. In figure 3, Hotchkiss' "Superior" six bar, closed back, is shown. This differs materially from the English in the manner of the attachment of the handle, which has, besides the trowel shank, two rods passing to the front of the comb. Figure 4 shows the way in which this style of handle may be grasped by the hand when long strokes are to be made upon the sides or back of the animal. The "Champion" is shown in figure 5—a six bar, solid

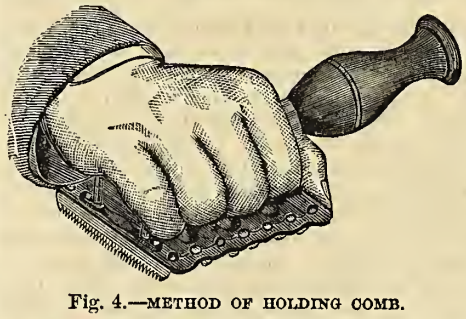


Fig. 4.—METHOD OF HOLDING COMB.

back comb, with the trowel shank flat. A bent iron rod passes from one side of the comb to the other, making at the same time a part of the handle and the "dusting wings"—or "jar knobs," as they are variously called. The position of the hand in hard scrubbing with this form of comb is shown in figure 6. Of the "Novelty," which differs from the others in not having any wooden handle, there are several kinds. The one shown in figure 7 is the heavy eight bar, with open back. A close backed, one of the same style, is shown in figure 8, as also the manner of holding the comb. The loop made at one side receives the thumb, while the fingers grasp the bar that passes across the top of the comb. An easy side motion is gained with this comb with the hand in the position given. Figure 9 shows "Lawrence Perfect Comb," with the mane comb attached. The method of attaching the handle is by heavy wires, two of which pass along the back and sides, while two others pass over, and are fastened to the top in front. A great variety of combs of this style of handle are made, differing in the number of bars, and whether the backs are open or closed, etc. The manner of holding this form of comb is shown in figure 10.

Not a tithe of the curry combs that are in use are here given—in fact, only here and there one from a long list of them. They are all so perfect that one can not go amiss in buying any of those illustrated.

As regards their use, it goes without saying that they are implements which no lover of neat looking, well eared for, and healthy horses will be without. Like all good things, curry combs have their place and their use; they can be abused; but the tendency is not in that direction.

Milking and Milking Time.—Any one who has had to do with dairy farming, knows that there are a great many poor milkers, against a few who understand and practice the proper method of removing the milk from a cow. It is a well-known fact that some persons can obtain more milk from a cow, with greater ease and in quicker time than others. In the first place, there must be an air and spirit of gentleness about the milker, which the cow is quick to comprehend and appreciate. It is not to be expected that a cow, and especially a nervous one, will have that easy, quiet condition so necessary to insure an unrestrained flow of milk, when she is approached in a rough way, and has a person at her teats that she justly dislikes. There must be a kindness of treatment which begets a confidence before the cow will do her best at the pail. She should know that the milker comes not as a thief to rob her, but simply to relieve her of her burden,

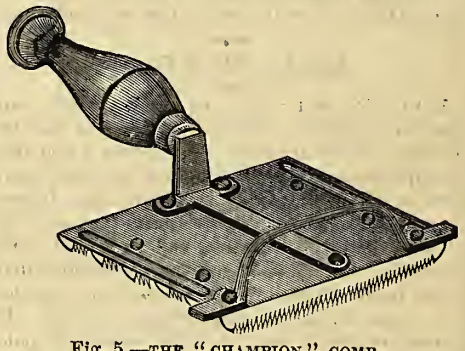


Fig. 5.—THE "CHAMPION" COMB.

and do it in the quickest, quietest, and kindest way possible. The next point in proper milking is cleanliness: and it is of the greatest importance if first-class milk and butter are the ends to be gained in keeping cows. No substance is so easily tainted and spoiled as milk; it is particularly sensitive to bad odors or dirt of any kind, and unless the proper neatness is observed in the milking, the products of the dairy will be faulty and second class. Those persons who can and will practice cleanliness while at the cow, are the only ones who should do the milking. It matters not how much care is taken to be neat in all the operations of the dairy, if the milk is made filthy at the start; no strainer will take out the bad flavor. Three all-essential points are to be strictly observed in milking: kindness, quickness, and neatness. Aside from these three is the matter of the time of milking. It should be done at the same hour each and every day, Sundays not excepted. It is both cruel and unprofitable to keep

Fig. 6.—POSITION OF HAND.

the cows with their udders distended and aching an hour over their time. We will add another *ness* to the essentials already given, namely: promptness.

An Experiment in Deep Drainage.

Four years ago we laid a side-hill drain through a small pond hole at the depth of 15 inches, which

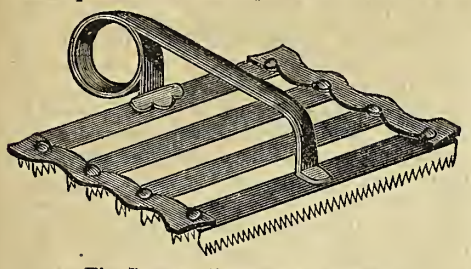


Fig. 7.—THE "NOVELTY" COMB.

was all that the fall allowed of at that time., The drain worked well, and carried off all the surface water that gathered, but failed to give maximum crops. Every season the area of shallow drainage has been marked by a stinted growth of cabbages, potatoes, beets, and carrots. The adjoining area which admitted of three feet drains, has given as good crops as could be desired. This spring we have dug a greater distance for an outlet, breaking through the rim of the basin that held the pond, and have put down tiles three feet, which works like a charm. The ground is cracking for several feet on each side of the drain, the water has disappeared, and the air has gone down after it. This ameliorating process going on above tile-drains is one of the most beautiful sights a cultivator can behold. Drains two and a half to three feet below the surface are a good investment in all wet or hard-pan soils. We notice, with great satisfaction, the rapid spread of tile-draining in some of the older Western States. Recent meetings of the tile manufacturers there show that in Ohio, Indiana, Michigan, Illinois, Wisconsin, and Iowa, they have 1,140 tile factories now, instead of 400 in 1870. During the last year they turned out 175,000,000 tiles, worth $2,812,500. The average depth of laying the tiles is 33 inches, and the cost of digging is from 15 to 30 cts. a yard, but in the yield of crops the increase is from 25 to 100 per cent. The cost of tiles is $6.25 per thousand, which is much below the prices we have to pay in the East. A stronger argument for thorough drainage by tiles than these brief statistics could not be presented. Even in the new States, where the soil is far from being exhausted, it is good economy to put down tiles. The good seed sown in the *American Agriculturist* from the record of Tim Bunker's Experiments in the Horse Pond Lot over twenty years ago, to the present, is springing up and bearing fruit. CONNECTICUT.

Keeping Off the Bugs.—We have frequently advised the making of frames to be covered with a pane of glass, for use in forwarding cucumbers, melons, and other semi-tropical plants in the garden. We have found these frames to serve a double pur-

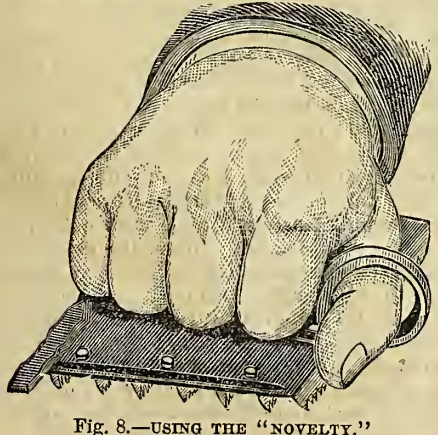


Fig. 8.—USING THE "NOVELTY."

pose, in keeping the striped bugs from the plants as well as in keeping them warm. A correspondent, "C. W.," uses similar frames for the insects alone. He writes: "The best investment I ever made was a few cents for mosquito netting last season. I had tried almost everything before recommended as infallible protection against the Striped-bug on vines by practical gardeners—dead clams, quassia water, soot, ashes, plaster, lime. Miserable comforters were these all. Heavy rains would wash off the upper sides of the leaves, and the under sides would always be exposed to the ravages of the bugs, so that eternal vigilance and much use of thumb and finger was the price of every squash, melon, and cucumber grown upon the place. But a few cents' worth of netting drawn over my bottomless box, or frame, large enough to cover the hill, makes light work of growing melons and cucumbers. Plant the seed as usual, and when the plants begin to make their appearance, the frames covered with netting are put over the hills. They need only be removed for the purpose of cultivation, until about the first of July, when the bugs disappear. Any store box, such as soap, starch, canned fruits, etc., are packed in, will answer.

The Temper of the Horse.

In a prize essay upon the English Cart Horse, published in the "Agricultural Gazette" (London), the author treats his subject under ten heads, as follows: "1, the size—2, the carcase—3, the back and loins—4, the shoulders and fore legs—5, the feet—6, the hind quarters—7, the head and neck—8, the color and skin—9, the action—10, the temper." We quote the remarks under the last head, because they apply as well to our farm and other horses as to cart horses in England. "A really vicious stallion or mare should scarcely be devoted to the stud. We ought not needlessly to risk the lives of our-

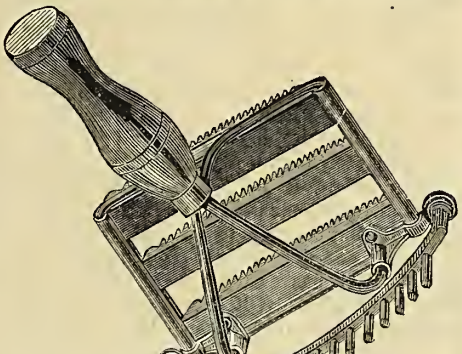


Fig. 9.—THE "LAWRENCE" COMB.

selves or the attendants, and we should not therefore run the risk of breeding biters and kickers, for, without undervaluing the late Mr. Rarey's system, which we believe to be good, we yet prefer adhering to the principle that 'prevention is better than cure.' Of scarcely less importance as regards utility, although not dangerous, is another fault which has been stigmatized as a vice, and which, in purchasing a cart horse, we guard against by the proviso that the animal must be warranted a good worker. We allude to a hot or fretful worker. We may endure such fault in a hack or single-harness horse, but in a hunter or a cart-horse it is a sin which cannot be forgiven. Such an animal is an eye-sore to the master, and an annoyance to the attendant. When at work he is always fretting and sweating, and when at rest looks mean and miserable. Jibbers and restive horses are of course to be avoided; the former vice is more likely to be hereditary than the latter, which often springs from bad management or rough usage, but the want of stanchness to the collar, which is understood by the first appellation, is frequently innate—hereditary."

A Rail Holder.

Robert Erdly, Snyder Co., Pa., who "finds in the *American Agriculturist* nearly all kinds of drawings

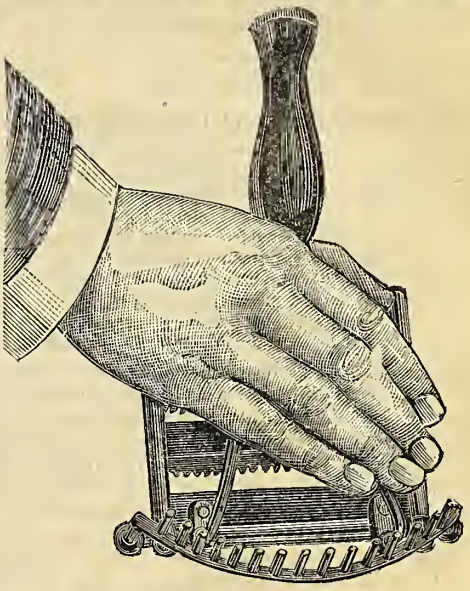
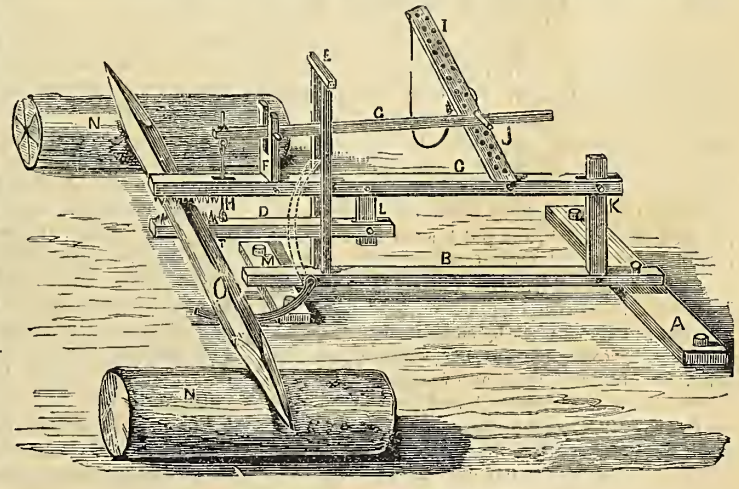


Fig. 10.—THE "LAWRENCE" IN USE.

and descriptions of machinery that are needful upon the farm," wishing to contribute his share, sends a sketch of a Rail Holder, which he has used for eight years and finds very useful.

Directions for the construction of the machine: "The piece *A*, is made of 2-inch plank, 6 inches wide and 4 feet long with a pin hole at each end, as shown in the engraving; *B*, is of the same material, 8 or 9 inches wide, 4½ feet long; *C*, is a 3 by 4-inch scantling about 5½ feet long, and *D*, is of the same material about 3 feet in length. The piece *E*, is of 1-inch board, 3 inches wide, 3½ feet long, with a cross-piece on top. *F*, is 3 by 3 inches, about 16 inches long; *G*, is 1½ by 2 inches, 4 feet long. The iron rod *H*, is ⅜ of an inch thick; a chain will answer the same, if being about 21 inches long; *I*, of 1-inch board and 3 inches wide, about 3½ feet long with small holes. *J*, is an iron pin; *K*, an 1-inch board about 16 inches long, 3 or 4 wide; *L*, is 1 by 3 and 7 long; *M*, a curved brace about 16 inches long fastens with hinges to *B*; *N*, *N*, chopping blocks; *O*, the fence rail; *C*, and *D*, are made with sharp iron teeth in them, 1½ inch long, to hold the rail in its proper place, as shown in the engraving. In using this machine four stakes must be driven into the ground, one through the holes at each end of *A*, and one on each side of *B*, near the end at *M*, to keep the machine at its place. When a rail is ready to take out, draw out the pin,



A MACHINE FOR HOLDING RAILS.

J, raise up the lever, take hold of the beam *C*, and raise it up and place *M* under it; shown by dotted lines in the engraving; the rail is then loose, and the machine is ready, with its mouth open, for the next rail. This machine is also very useful for

hewing posts. Either one of the Blocks, *N*, can be laid against the machine to suit a right or a left-handed operator. The butt end of post must always be put in the machine. Every farmer or fence maker ought to have such a machine, as the rails can be pointed more regularly and with ease."

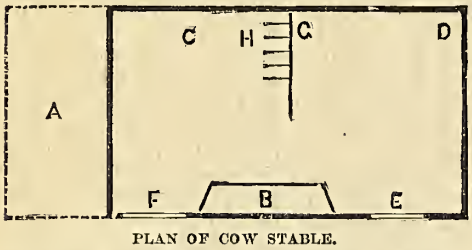
[FIRST PRIZE ESSAY.]

The Family Cow, and How to Keep Her.

She's broad in her hips and long in her rump,
A straight and flat back without even a hump.
She's wide in her lips and calm in her eyes,
She's fine in her shoulders and thin in her thighs,
She's sleight in her neck and small in her tail,
She's wide in her breast and good at the pail;
She's fine in her bone and silky of skin,
She's a grazier without and a butcher within.
—MILBURN.

There are several ways of providing for the wants of a cow, but in all cases it is absolutely necessary, in order to obtain the best results, that certain rules be followed with regard to the treatment the cow receives. She must be fed and milked at regular times, be kept thoroughly clean, have plenty of fresh air and water, and her food composed of those substances that will keep her always in good condition, do away with the milk bill, reduce the grocer's account, and contribute greatly to the health and comfort of the family. I have tried various things, and have found fresh grass or fodder, provender, bran, oil-cake, mangels, and hay, the best bill of fare for "Daisy" or "Buttercup." Avoid brewer's slops or grains as you would poison, for although they increase the flow of milk, it is thin and blue, the butter white and tasteless, and after a time the cow's teeth will blacken and decay. I was told the other day by a very intelligent dairyman that after feeding his cows one season on brewer's grains he was obliged to sell his whole herd.

Mr. Geo. E. Waring, Jr., in his "Ogden Farm Papers," says he expects to be able to feed a cow from May 15th to November 15th from ½ acre of ground, but the average citizen had better not attempt it, but keep his half acre to raise vegetables



PLAN OF COW STABLE.

and fruit, buying what food he requires to keep his cow. A cow can be made very profitable if kept in the following way: First, as to the accommodation required, a yard 15 feet by 15, and a stable or cow-shed arranged as in the following plan. *A*, manure shed; *B*, bin for dried earth; *C*, cow; *D*, store-room; *E*, window for putting in hay; *F*, door; *G*, trap to loft; *H*, feeding trough. Her food to be provided as follows: Into a common wooden pail put one quart of provender (provender is oats and peas ground together, and can be purchased at any feed store), ½ lb. of oil-cake, then fill the pail nearly full of bran and pour boiling water over the whole; stir well with a stick, and put it away covered with an old bit of carpet until feeding time; give her that mess twice a day. Her dinner from June to November to consist of grass or fodder cut and brought in twice a week by some farmer or market gardener in exchange for her manure and sour milk. In Montreal, grass and fodder is brought to market by the "Habatants," and sold in bundles. As to quantity, a good big armful will be sufficient, and it is more healthful for the cow if it is a little wilted. In the winter, hay and mangels are to be fed in place of the grass and fodder. She should also have salt where she can take a lick when so minded, and fresh water three times a day. The yard should be kept clean by scraping up the manure every morning into the little shed at the end of the stable. The following table shows the food required to keep one cow well the entire year:

Hay, the best, 2 tons, at $10 per ton	$20 00
200 lbs. of oil-cake, at $4 per 100 lbs	8 00
800 lbs. of provender, at $1 per 100 lbs	8 00
¼ ton of bran, at $12 per ton	6 00
1 ton of mangels	5 00
	$47 00

Your cow will require the following "trousseau":

1 five-gallon stone churn	$1 25
1½ doz. tin milk-pans, at $2	3 00
1 milk pail and strainer	60
1 butter bowl (wooden)	50
1 paddle and print	20
2 wooden pails for feed	40
1 card	25
	$ 6 20
Cost of a good cow	40 00
Interest at 8 per cent	$3 69

Any ordinary family will take from a milkman at least one quart a day. We in Ottawa pay 8 cents per quart, making per year 365×8c., $29.20.

It is a very poor cow that will not average 5 lbs. of butter a week for 40 weeks, and that at 25 cents per lb., that is, 40 weeks×5 lbs.,×25c., equals $50.00.

So the account stands thus:

Butter		$50 00
Milk		29 20
		$79 20
Cost of food for one year	$47 00	50 69
Interest on cow and trousseau	3 69	
Profit		$28 51

I have found that two acres of land is the least possible area that will provide cow-food for the entire year, and that should be divided thus: One acre for hay, the other for fodder and mangels. If you have no land already seeded down, plow up your acre, sow clover and timothy, 6 lbs. of each. In May, when the grass has fairly started, top-dress it with two bushels of land plaster; if you can apply it just before a rain it is the best time. The first year you will have all clover hay, and it must be cut before the second blossom comes; if not cut early enough, the stalks become tough and woody, and are wasted by the cow. The second year, if top-dressed in the fall with the manure collected during the summer, you will have a fine crop of timothy, and if the land was good for anything you can cut hay from it for three years by giving it a little manure every fall. As early as the ground will admit, sow some peas and oats; one bushel of each will plant one-third of an acre. Peas do well on old sod, and are the best crop to plant on new ground. In about six weeks you can commence cutting it for fodder, and it should give the cow two good meals a day until corn comes in. L. B. Arnold, in "American Dairying," says of corn: "When too thickly planted its stems and leaves are soft and pale, its juices thin and poor. If sown *thin* or in drills, so that the air and light and heat of the sun can reach it, and not fed until nearly its full size, it is a valuable soiling plant." Now Mr. Waring, in "Farming for Profit," says: "It is a common mistake when the corn is planted in drills to put in so little seed that the stalks grow large and strong, when they are neglected by the cattle, the leaves only being consumed. There should be 40 grains at least to the foot of row, which will take from four to six bushels to the acre, but the result will fully justify the outlay, as the corn standing so close in the row will grow fine and thick." My experience tells me that Mr. Waring is right; any way, my cow will not eat the coarse stalks which will grow when the corn is planted too thin.

The one-third acre reserved for mangels, must be the perfection of richness, well drained, and manured. If the soil is deep, you can plant them on the flat, but if the soil is shallow, plant them on ridges, the ridges 30 inches apart, (I always plant them in that way); then thin out the plants to 15 inches apart. Ten to twelve hundred bushels may be grown on an acre, but the ground must be properly prepared. In storing them, they require to be very carefully handled, as the least bruise hastens decay, and we want to keep them fresh and good until April, when our cow ought to give us a calf.

I thought I had tried almost everything relating to the care of cows, but when I undertook to wean a five weeks' old calf, I found my education in that respect sadly neglected. I asked a farmer's wife how I was to manage, "Oh," she said, "just dip your fingers in the milk, and let the calf suck them a few times, and it will soon learn to put its nose in the pail, and drink." It sounded simple enough, so I took my pail and started for the barn, where that wretched animal slopped me all over with milk, bunted me round and round the pen, until I was black and blue, sucked the skin off my finger, and wouldn't drink. After trying at intervals for two days, the calf was getting thin, and so was I. In despair, I left the pail of milk, giving that calf a few words of wholesome advice. When I went back two hours after, the calf was standing over the empty pail, with an expression on its face, that I translated into an inquiry, as to why I hadn't left that pail there before. I have weaned several calves since then, but have never had any trouble. Leave them with the cow 3 or 4 days, then take a little milk and hold the calf's nose in the pail, it must open its mouth or smother, and when once it tastes the milk, will soon learn to drink.* When it is a week old, commence feeding with oil-cake, skim milk, and molasses. Into an old 2-lb. peach can, I put one tablespoonful of oil-cake and one of molasses, fill up the can with boiling water, and set it on the stove until thoroughly cooked. That quantity will be its allowance for one day, mixed with the skim milk. The next week give it that quantity at each meal, and the next week twice that. The calf will then be four weeks old, and the butcher ought to give you a price for it that will pay for all trouble and the family milk bill while the cow was dry. It does not pay to raise calves where you only keep one cow. (Mr. Cochrane, the owner of the celebrated cow, "Duchess of Airdrie," told me the other morning that last year he sold a calf of her's to an English gentleman for 4,000 guineas ($20,000). I think it would pay to have a wet nurse if one had a calf like that). A tablespoonful of lime-water put in the milk now and then will prevent the calf from "scouring," a complaint very common among calves brought up by hand. I believe that winter rye makes a valuable soiling plant, but I have never tried it.

A Few Words as to General Management.

I think it cruel to keep cows tied up all summer. They do not require much exercise, but fresh air they must have, and it is a great comfort to them to lick themselves, although they ought to be well curried every day. It is better to milk after feeding, as they stand more quietly. Don't allow your milk-maid to wash the cow's teats in the milk pail, a filthy habit much in vogue. Insist on her taking a wet cloth and wiping the cow's bag thoroughly before she commences to milk. A cow ought to be milked in ten minutes, although the first time I undertook to milk alone, I tugged away for an hour. I knew how much milk I ought to have, and I was bound to get it. An old cow will eat more than a young one, but will give richer milk. If you can get a cow with her second calf, you can keep her profitably for 5 years, when she should be sold to the butcher. There is nothing that will keep your cow-shed so neat, and add so much to the value of your manure pile, as a few shovelfuls of dry earth or muck thrown under the cow. It will absorb the liquid manure better than anything else. Don't allow your milk pans to be appropriated for all sorts of household uses; you cannot make sweet, firm butter if the milk is put into rusty old tin. Skim the milk twice a day into the stone churn; add a little salt, and stir it well every time you put in fresh cream. Use spring water, but don't allow ice to come in contact with the butter; it destroys both color and flavor. If your cream is too warm the butter will come more quickly, but it will be white and soft. When the cream is so cold that it takes me half an hour to churn, I always have the best butter. Don't put your hands to it, work out the buttermilk with a wooden paddle, and work in the salt with the same thing. There is an old saying that one quart of milk a day gives one lb. of butter a week, and I think it is a pretty fair rule, but don't expect to buy a cow that will give your 30 quarts of milk a day. There are such cows I know, but they are not for sale. Be quite satisfied if your cow gives half that quantity. Place the cow's food where she cannot step on it, but

[* It is better, as a rule, not to allow the calf to suck at all. The aptness to learn to drink is influenced largely by heredity. Calves from ancestors that have not been allowed to suck, learn to drink more readily than those which have been allowed to run with the dam.—ED.]

don't put it high up; it is natural for them to eat with their heads down. I think it is better that the family cow should have a calf every year, provided you can have them come early in the spring or late in the autumn. As to the time that a cow should be dry, that depends much upon the way the cow was brought up. If she was allowed to go dry early in the seasou with her first calf, she will always do it. A cow being a very conservative animal, she should be milked as long as her milk is good. When she is dry stop feeding the provender, bran, and oil cake, give her plenty of good hay, with some roots, until after she calves. The provender and oil cake being strong food, are apt to produce inflammation and other troubles at calving time. You can feed turnips when she is dry, at the rate of two pails a day, cut up fine of course, but don't feed turnips when she is milking. I have tried every way to destroy the flavor of turnips in milk, but without success. I have boiled it, put soda in it, fed the cow after milking, but it was all the same—turnip flavor unmistakable—and as we don't like our butter so flavored, I only feed turnips when the cow is dry.

The Rev. E. P. Roe in his delightful book called "Play and Profit in My Garden," says: "If a family, in ordinary good circumstances, kept a separate account of the fruit and vegetables bought and used during the year, they would, doubtless, be surprised at the sum total. But if they could see the amount they could and would consume if they didn't have to buy, surprise would be a very mild way of putting it." The same rule applies to the keeping of a cow. We buy one quart of milk a day and manage to get along with it. Our cow gives us from 10 to 20 quarts a day, and we make way with the greater part of it. I think with a cow and a garden one may manage to live, but life without either, according to my ways of thinking, would be shorn of many of its pleasures. "BUTTERCUP."

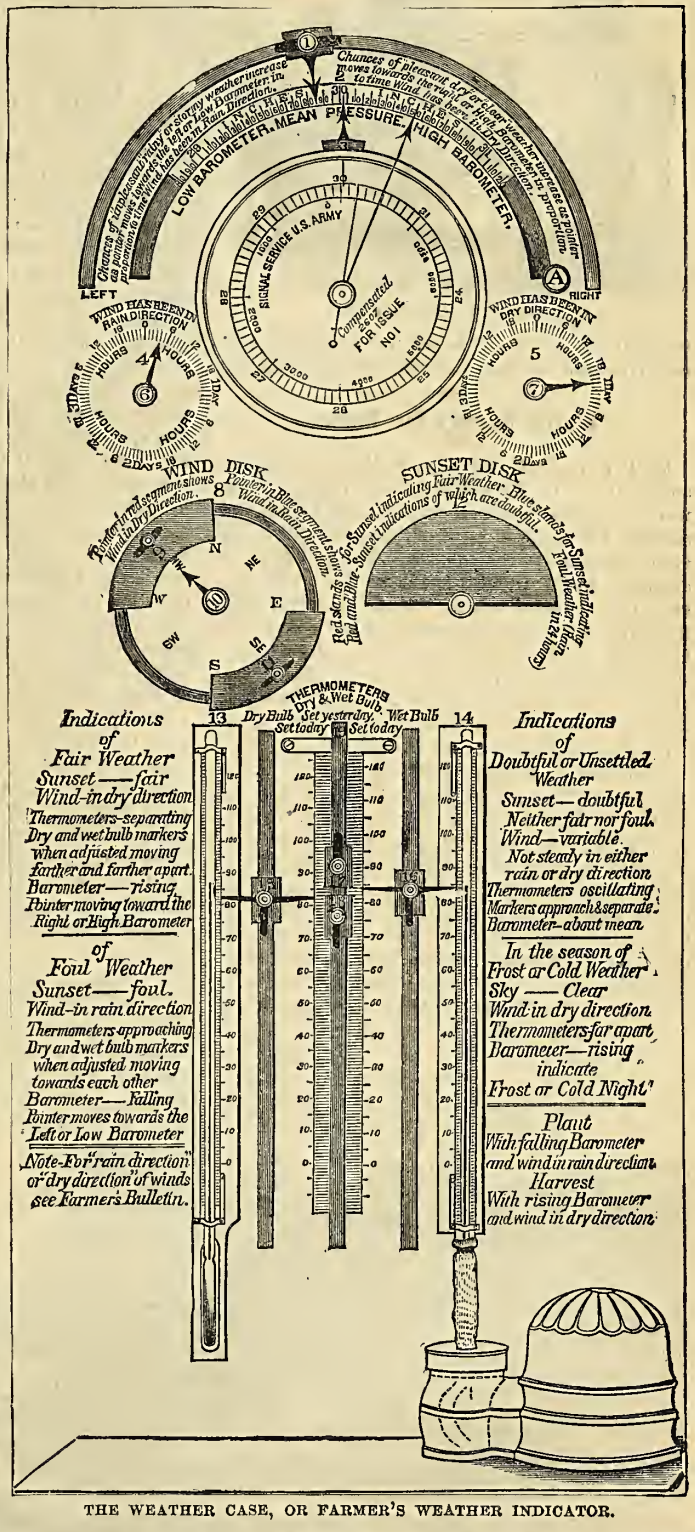
(MRS. G. BOURNOT, *House of Commons P. O., Ottawa, Canada.*)

The U. S. Signal Service and Farmers.

The benefits of the United States Signal Service in the weather indications furnished at the various ports have been of untold value to commerce; indeed, it can never be known how great has been the saving of life and property due to an observance of the "Danger Signals," set at its stations. In a measure the usefulness of the Service is to be extended to Agriculture, and arrangements are being made so that farmers living beyond the reach of the daily weather reports may of themselves, by a little careful observation, make forecasts of the weather much more accurately than they could without the aid furnished by the Signal Service.

The Weather Case, an engraving of which we are enabled to give through the courtesy of Gen'l Myer, the efficient chief of the Service (and known to so many by the familiar, but not disrespectful title of "Old Prob."), is made upon the principle that no single instrument is of much value as a weather indicator. Barometers have greatly fallen in public esteem because the makers foolishly mark on them "fair," "rain," etc., it not being possible for the instrument to give any such positive indications. A reading of the barometer with the wind in one direction, may indicate very differently from what it would with the wind in an opposite point. It is only when the *tendency* of the barometer is taken with the direction of the wind, and to these observations are added those of the Dry and Wet-bulb thermometers, and the character of the sky at sunset, that a tolerably accurate forecast can be made of the weather for the next day. Our object is merely to describe the instrument—or rather set of instruments, the whole being called "The Weather Case, or Farmers' Weather Indicator." As each case is accompanied with full and minute descriptions, with directions for making observations and deciding from these what are the "indications," we need only describe the different parts in general terms. At the upper part of the case is the Barometer, the circle with a graduated one within it and a long and short pointer. The Barometer with which our readers are most familiar is the Mercurial, a long tube containing mercury. In the Case a form of barometer called the *Aneroid* (a made up word meaning *not wet*, as it contains no liquid) is used—only the dial is shown—; it is a circular box of thin metal and partly exhausted of air. As the details would not be understood without an engraving, suffice it to say that this box is so arranged that its thin sides will change position with the pressure of the atmosphere; they will be pressed towards one another when the air is heavy, and move apart when it is lighter. This motion is communicated to the short hand seen upon the dial, upon which are degrees corresponding to the inches of a mercurial barometer. It is the short hand or pointer which is moved by the barometer; the long pointer is moved by hand to be directly over it, and to allow any changes made by the shorter one to be noticed. It also points to a graduated arc above, which we need not describe any further than to say that all above the circular dial is a contrivance for showing the mean barometer reading of the place for the month, and that its use is fully described in the circular. At the right and left of the barometer scale are disks for recording the length of time the wind has been in a particular direction. Next below on the left is the Wind Disk, to be set three times a day to show the direction of the wind. Opposite this is the Sunset Disk. A semi-circular opening has behind it a disk, half of which is red and the other half blue. If the sunset was a fair weather one, the disk is to be turned to show its red half; if foul, its blue half, or if doubtful, then parts of both colors are shown. Below are the Thermometers. That at the left is an ordinary thermometer; the one at the right is just like it, except that its bulb is covered with cotton wicking, which is kept wet by having its lower end in a fountain arranged to hold a supply of water. The Wet-bulb thermometer shows whether the atmosphere is moist or dry, and is a most important aid in weather observations. Every one knows that clothes will dry more rapidly in a dry air than in a moist one; if the finger be wetted, and held in a dry current of air, a sensation of coolness will be felt. The Wet-bulb thermometer acts upon these two principles, that evaporation produces cold, and that evaporation is more rapid in a dry air than in a moist one. As water evaporates from the bulb of one thermometer, that will be cooled, and its reading be lower than that of the other thermometer just like it. Between the two thermometers are arrangements for showing how far apart the two thermometers are at any given time. In dry weather they will be farthest apart; if the two readings are coming nearer together, the air is growing more moist—one of the indications of a change. By a careful study, according to the directions given, of the *changes* that occur from day to day, an observant person may soon learn to foretell the weather with a useful degree of accuracy and certainty. The real Case is 31 inches high, 13¼ inches wide, and about 4½ inches thick. The front is covered by a glass door, which is kept closed except when making observations and adjusting the different instruments; it resembles a clock.

The whole thing being quite new, we are not able at this time to state how and where the cases are to be distributed. In a general way we understand they are to go to those agricultural centers at a distance from large towns where the regular weather report is received daily, or twice a day, and where they will be of use in foretelling the weather for that locality. It is probable that we may be able to give something more definite next month.

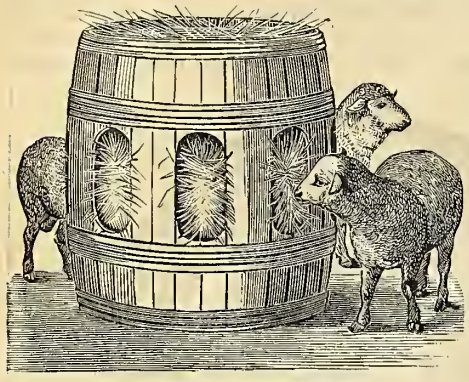


THE WEATHER CASE, OR FARMER'S WEATHER INDICATOR.

A Hogshead Sheep Rack.

Mr. D. E. Manter, Kennebec Co., Maine, finds that a very convenient rack for a few sheep can be made in the following manner: An ordinary molasses hogshead is taken, and one of its heads re-

moved. The alternate staves in twos are cut away, in the manner shown in the engraving, thus making feeding places for a half dozen or more sheep. A rack of this kind can be made at very little cost; is handy to put the fodder into, and



A HOGSHEAD FODDER-RACK.

certainly can not be objected to by the sheep, as each one has a full and equal chance to feed from it.

Water Supply for Barns.

Mr. S. J. Boyd, Orange Co., N. Y., sends sketch, and writes: "In April 1876, I moved upon a farm where water was scarce around the barn. During the summer I dug a well on a dry side-hill above the barn, and some 20 rods distant. The well (7 ft. in diameter, by 27 ft. deep), was so far above the barn, that it could be dug somewhat deeper, and then draw water from the bottom of the well, to the barn, with a siphon. Eighteen ft. of the 27 dug, was through very hard slate rock, which was loosened with Common Rock, and Giant Powder, the latter doing greater execution with the same drilling, and much more convenient, as water does not injure it in the least while blasting; in fact, I used water alone for tamping. After reaching the depth of 27 ft., I stoned up only from the top of the rock, about 9 ft. The well then having cost considerable, and not being entirely satisfied with the supply of water, I did not care to spend any more money laying pipe, etc., until there was reason to believe the supply of water was sufficient to keep at least a small stream of water constantly running. November 18th, 1878, I finished laying a half-inch lead-pipe from the well to the barn, and started the water running. Although last winter was a cold one, and many farmers were short of water for their stock on account of the long cold spell of weather, my rock-well gave a stream of water and did not fail, neither has it failed up to the present time, (Dec. 2nd, 1879.) This gives me every reason to believe that my dry side-hill water-works are a success, and the convenience for cooling milk, and watering stock, is worth more than the interest on the cost of the well, lead-pipe, etc., which at present prices, would amount to about $100."—[The accompanying engraving shows the method which Mr. B. has found so satisfactory, and it may suggest to others having a side-hill farm of a similar nature, that a like investment may greatly benefit them.—ED].

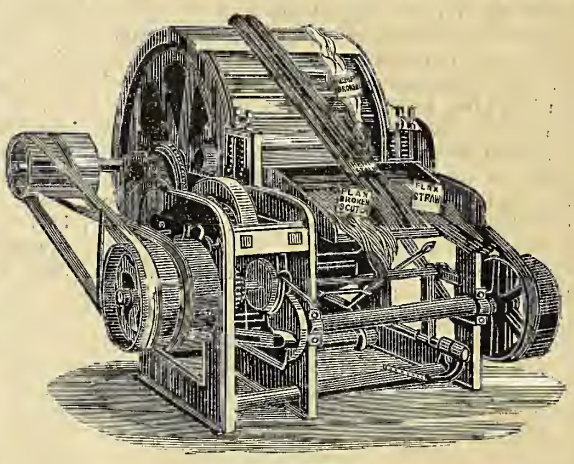
PLAN OF HILL-SIDE WATER-WORKS.

Prickly Comfrey.

The *American Agriculturist* was one of the first journals to bring Prickly Comfrey into notice, and while we were very guarded in what was said about it, there are so many who take the mere mention of a new thing as an advertisement, we were quite desirous that it should not turn out to be a failure. Singularly enough, since we published an account of its being planted largely in Massachusetts in the spring of last year, not a single report came to us. This spring several inquired as to the present status of the plant, and wishing to know ourselves the present opinion of those who have grown it longest, we made the inquiry of Mr. Ashburner, of Virginia, the gentlemen whose communication we published with our first article on the subject. Mr. A. writes, that he has no new facts either for, or against the plant, and is "still of the opinion that it is a very valuable fodder plant, and worthy of a place on every farm in America." Mr. A. was the first in the country to import the Comfrey, and at first sold the plants, but he writes that he gave up the sale, among other reasons, because he did not care to be subject "to gross insult, from buyers who could not, or would not take the trouble to cultivate it properly, and then would not take the trouble to educate their stock to eat the fodder, when grown." This no doubt touches the cause of whatever lack of success it may have met with, for animals do not take to it at first, any more than wild horses will to corn, or people who never have eaten them, to olives. It takes a few days feeding, mixed with other food at first, before the majority of animals will accept and eat it by itself, and few will take the trouble. Mr. A. says, and we think with truth: "Unless farmers will cultivate carefully their Comfrey, and give it a plenty of manure, they had better not trouble it;" he adds: "I look upon Prickly Comfrey as the *most valuable* green food for pigs, as far as my experience goes, and fresh pork fattened on it is worth eating." On the whole, we think that the plant is one that will be useful to those who will take the trouble to make it so; in hit-or-miss farming it has no place.

Flax and Flax Machinery.

No country can be regarded as really independent of other countries unless it produces not only all the food, but all the clothing material it consumes. So far as cotton and wool are concerned, we produce an abundance, but for flax and the fabrics made from it we are largely dependent upon others. Three agricultural products seem to make very slow progress in this country: sugar, from beets, oils, such as rape, colza, etc., and flax and similar fibres. One reason why these have not become important products of our agriculture is, because the farmer can not convert the raw material into a salable product, as this either requires expensive machinery and skilled labor to use it, or the processes by hand are slow, and, of course, costly. If the farmer is to be expected to produce the raw material only, he must be assured of a market before he will undertake its culture. Capitalists are not ready to establish factories until sure of a supply of raw material, and it takes a long time to establish the proper relations between the two—the farmer and the manufacturer. In the case of sugar, good progress has been made within a few years, and it looks as though we might, within a short time, cease to import sugar. In the matter of oils, our wonderful stores of petroleum, and the improvements in utilizing the heretofore almost wasted cotton-seeds, make it little necessary for us to seek any other sources of oils for burning, soap-making, etc. With flax and other fibres, one great obstacle to their profitable culture has been the slow processes of bringing them into marketable condition, which, at our prices for labor, made the raw material too costly. Every invention that tends to diminish this labor is of the greatest importance to the agriculture of the country. It was with no little interest that we recently watched the working of the



FLAX MACHINE.

machine of the American Vegetable Fibre Co., of Philadelphia, which breaks and scutches the flax at one operation in the most rapid and complete manner. The engraving shows the general appearance of the machine, which is very compact, taking up no more room than an ordinary grain fanning mill. The bunch of flax being spread upon the table in front of the machine, the stalks are caught in a set of grooved rollers, these by their peculiar motion cause the breaking, when the flax passes on to the scutchers, placed in the elevated part of the machine; after being subjected to their action for a short time, it depending upon its condition, the flax comes back, is turned, and the other end is submitted to the same operation. All of this takes but a very little time, and at the last motion the workman has the flax in hand, beautifully clean and shining, with not a fibre tangled or displaced. The operation is as thorough as it is rapid, a careful examination failing to discover any appreciable amount of boon remaining to be removed by the hackle. The officers of the Fibre Company are very enthusiastic over their machine and its effect upon the agriculture of the country, and when they assert that the machine "bids fair to give a new history to the whole business"—referring to flax-growing—we can not think them extravagant. One of these machines in each flax-growing township would make a vast difference to the profits of the farmers. To those who now raise flax for the seed, the machine will be of the greatest value, as by proper care in handling they may get a crop of fibre as well as one of seed. If seed is to be saved, the flax is harvested when the stem has lost its green color for two-thirds of its length; it is made into small bundles, and the few inches of the seed-bearing portion of the tops cut off with a hay or straw cutter having a single lever-knife; the stalks are then ready for rotting in the usual manner. We did not see the machine work upon hemp, but samples of the fibre that had been broken by it showed that it is equally useful for that crop. We so thoroughly believe in a diversified agriculture that we gladly welcome any improvement that will allow our farmers to add another to the crops which they may grow with profit, and think it will be well for those who have land suited to flax, to consider whether they might not find it to their interest to undertake its culture. We have recently learned that a machine has been invented in New Jersey which does for Ramie and similar plants what this machine does for flax; thus the subject of fibre production is rapidly increasing, and we shall watch its development with the greatest interest.

California Fritillarias.

Those who know the stately Crown Imperial, with its corona of inverted flowers as large as tulips, lifted 3 feet or more upon a sturdy, leafy stalk, would hardly recognize in the delicate flower here figured any close relationship, much less suspect it of being an own brother. We are aware that some botanists do not regard Crown Imperial as belonging to *Fritillaria*, but whatever they may do with it, the relationship will remain as close as ever. California is rich in plants of the Lily Family, there being a large number of charming species, though they are as yet rarely seen in cultivation. Of Fritillarias, the excellent recent monograph of the Family, by Mr. Watson, shows California to have nine species, of which the one here shown, if not the largest, is by far the most showy. The bulb, about an inch in diameter, has many short and thick scales, and is in appearance unlike the exotic species. In this plant the stem is from 12 to 18 inches high, and bears whorls of narrow, pointed leaves, like those in the engraving, and at the top one to three, usually, but sometimes as many as seven, flowers, about an inch long, of an elongated bell-shape. It will be noticed that the tips of the petals are strongly bent backwards, which is not the case with the other species, and on this account it was called *Fritillaria recurva*. The color of the flowers is usually a bright orange scarlet, but sometimes crimson, which makes them decidedly showy. The plant was originally discovered near Sacramento, and is found in various parts of the Sierra Nevada. A few years ago it was sent to us from Sierra Co., as the "California Tulip," a name also given to more than one other plant. Another species which we have (April 26) just coming into bloom, is *Fritillaria pudica;* this has bright lemon-yellow flowers, which are much larger and broader bell-shaped than this. Besides these with red and yellow flowers, *Fritillaria lanceolata*, with its blotched and marked blackish-purple petals, like the old "Guinea-Hen Flower" (*F. Meleagris*), presents a marked contrast in colors. Nearly all the species are desirable, and will no doubt be popular when we learn to treat them properly. The bulbs we planted last fall flowered freely this spring; what will be the effect upon the bulbs of our wet autumns after a dry summer, remains to be seen. In California, rains coming after a long season of rest through dryness, announce the beginning of spring; with us, it is the beginning of winter. Should autumn start the bulbs into growth, that will be the end of them. It will then be necessary to take up the bulbs when the leaves die off, and keep them out of the ground as late as possible before planting. Not only the Fritillarias, but the various species of *Colchortus*, and related bulbous plants, the flowers of which, though not as a general thing very large and showy, are often of such quiet beauty, that we would not abandon their culture, if any amount of pains-taking, and observance of their peculiar wants will allow us to obtain success with them.

A CALIFORNIA FRITILLARIA (*Fritillaria recurva*).

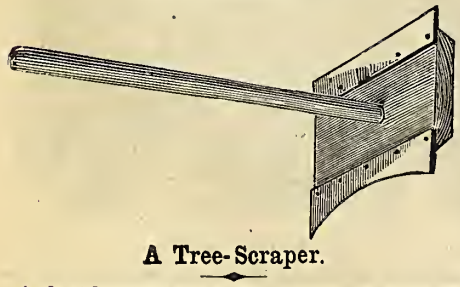
Alpine or Rock-Work Plants.

Nothing about modern gardening is more apt to be misunderstood than rock-work. Most plants that will grow in flower pots can be made to grow in pockets of earth in a pile of rocks. This pile of rocks can be placed in the middle of a lawn, and as the rocks are apt to be of different colors, they can be made to look all alike by a coat of cement, or still worse, of whitewash. Not only can all this be done, but it is done, and it is a rock-*work* indeed, for there is nothing in the thing, its place, or the plants with which it is filled, that is not thoroughly artificial, while the only reason for having a rock-work at all is, that it introduces a bit of natural scenery where it did not before exist, and allows us to bring variety into the grounds. Unless there is some nook or corner about the place where rocks might naturally occur—and if they did so occur on the lawn they should be blasted out—it is better to leave the rock-work to those who have a proper place for it. But our object is not just now so much the rock-work itself, as the plants proper to grow upon it. Begonias, Geraniums, and bedding plants generally are entirely out of place on the rock-work, as they, for the most part, do much better in beds or in pots, and their whole port and bearing is a protest against planting them there. It is on the high mountains that natural rock-work is seen in its greatest perfection, and there we find plants, usually of low stature, spreading themselves over the surface of the rocks and blooming freely, while their long and fine roots are far down in the cool soil that fills the crevices. But as rocks are not confined to the high elevations, so the plants suited to the rock-work need not of necessity be those naturally alpine. Indeed, in gardening works the term "alpine" is applied to many plants that never get above the general level. In the high regions of terrific storms and on the edges of perpetual snow, the only plants that can live are those of a low stature; only such as are found here are properly alpine, but in a garden classification other plants of low stature and similar compact habit are included also. The term rock-plants or rock-work plants is coming into use in place of "alpine," and is preferable, as it is equally definite and much more accurate. We not long ago, at an exhibition, heard a plant spoken of as "a lovely little alpine," that never knew a higher station than the pine-barrens of New Jersey, but it was a "lovely little" rock-plant. In saying that the rock-work should not rise as an irruption

THE BALEARIC SAND-WORT (*Arenaria Balearica*).

THE ROCK LYCHNIS (*Lychnis Sagascæ*).

(or eruption) upon the lawn, it is not on account of the exposure, but as in bad taste; the rock-work need not be in the shade; it may be placed there, but then the plants selected for it must be of shade-loving kinds. The true alpines have the most complete exposure, at least all parts but the root, and that has the most complete protection. In artificial rock-work success largely depends upon imitating these conditions for the roots, hence in constructing the rock-work, closed pockets should not be made, but crevices of various sizes, and the earth in these should connect with the soil below, so that at a distance below the drying sun and air the mulching influence of the rock will be aided by capillary attraction in keeping the soil of the crevices genially cool and moist. One may devote a rock-work to special classes of plants, or to a variety; ferns, many of which are well suited to rock-culture, make a pleasing collection; the succulents, including the Stone-crops and House-leeks, the hardy Cacti, and others form an interesting collection of curious forms, but most persons will prefer a variety, and their tastes may be gratified by collecting suitable and inexpensive—but not less beautiful wild-flowers, or by the purchase of exotics suited to the purpose. Among our natives the Early Saxifrage, the charming Bluets (*Houstonia*), Trailing Arbutus, Wind-flower, Rue Anemone, Columbine, Harebell, Moss Pink may be mentioned; these show what beauty and variety may be found among our native flowers without naming a host of others equally pleasing. So popular have such plants become in England that Mr. Robinson's book on "Alpine Flowers for English Gardens," as stated some time ago, has passed to a second edition, and one who would know about the numerous list of these plants should consult that work. Most of our florists offer more or less of the exotic alpines, and they are made a specialty by a few; whenever there is a demand for such plants it will be met by our enterprising dealers. In looking over a collection of such plants at the establishment of Messrs. Woolson & Co., we selected two of the newer kinds—new to this country—as showing a habit of growth very effective upon a properly constructed rock-work where there are miniature steeps or rocky shelves, over which some plants can trail their stems or hang down in diminutive garlands. The Rock Lychnis, *Lychnis Lagascæ*, is from the Western Pyrenees; it is a free-grower, quickly forming a mat of stems and foliage, and producing in early summer a great profusion of rosy-pink flowers like those shown in the engraving. It is especially valuable in not requiring much moisture, but will flourish in the driest parts of the rock-work. The Balearic Sand-wort, *Arenaria Balearica*, from Corsica, is remarkable for its foliage, which is of the most diminutive kind; its leaves seem more like those of a Selaginella than of a flowering plant, and in the mass make dense mossy cushions or a tiny carpet of the most pleasing verdure. Unlike the other this prefers a fairly moist situation, where it will cling to the rocks and throw out roots against their bare face. The tiny flowers, each upon a slender stalk an inch or so high, appear against the dark green like little pure white stars. The engravings show both plants of the natural size, and they both may be cultivated in the garden border, or even in pots if it is desired to do so.



A Tree-Scraper.

A short-handled hoe is the implement generally used for scraping the trunks of neglected and moss-grown trees. Mr. W. E. Bower, Clark Co., Ind., sends a drawing of a Scraper which he prefers to any other. A piece of inch-board 8 inches long and 3½ inches wide has a curve cut upon one side an inch deep in the center. A piece of strap-iron 1¼ inch wide is nailed to both the curved and the straight edges of the board, which are bevelled to meet them. A handle 20 inches long is fitted to a hole in the center of the board. Mr. B. uses the curved edge first, with an up and down movement, which removes all the loose scales of bark; if any fragments escape, an application of the straight edge will displace them.

The Elderberry Fungus.

Anything that is out of the ordinary run of things—is, in other words, a little strange—will in most cases find its way to our office with that question of all questions, "What is this?" This year we will anticipate a call for information by presenting a drawing, with a brief description, of the fungus which attacks the leaves and young branches of the common Elderberry (*Sambucus Canadensis*). This parasitic fungus belongs to the same group as the well known wheat rust; and as found on the Elderberry it is of the "cluster cup" form. It is

THE ELDERBERRY FUNGUS.

to be remembered in the treatment which the *Wheat Rust* received in August last, that it was shown that there were certain distinct *states* through which the rust plant passed, one of which was upon the Barberry, namely, the "cluster cup" form. The form upon the Elderberry is this "cluster-cup" one. Where the other states of the Elderberry fungus grows is not known.

So far as the Elderberry shrub is concerned, this parasite is not specially injurious to farmers, because the Sambucus does not take any high rank as a fruit-producing plant. As the matter now stands, the fungus in question is more curious than injurious. The way the fungus attacks the young branches and leaves is often very striking. We have found them, and had them brought to us, where the stem for a foot or so was swollen to several times its natural size, and twisted into all sorts of shapes; the surface for the whole length being covered with minute pits or cups, each filled with a vast multitude of orange-colored spores. The specimen from which the illustration is made is scarcely up to the average, but shows how thoroughly deformed the top of the branch has become; in fact, the growth of it has been entirely arrested by the fungus. One of the leaflets is seen to be rolled up, and its base greatly swollen, the surface of which is covered with the pits above mentioned; a few of them are shown in magnified view below and to the right. Small knots or enlargements are seen on some of the other leaflets, and one of some size at the union of the whole leaf with its stem.

The remedy, if it is desired to apply one, is the knife, removing all affected parts in early spring, which then should go at once into the fire.

Horticulture at the Railroad Stations.—A trip over the railroad between New York and Philadelphia, by the way of Bound Brook, the first since Centennial days, we were glad to notice the improvements at the stations. The grounds around the stations, some of half an acre or more, and others not larger than a city lot, had been put in beautiful order. Grass, evergreens, flowering shrubs, and in some cases flower-beds, made these usually desolate places charming spots for the eye to rest upon. They had an air of care and neatness that must exercise an influence throughout the neighborhood. But this road is not alone in well doing; happening to meet Mr. Hayes, a well-known horticulturist of Philadelphia, he informed us that he had the contract for laying out and planting the stations on the line between Philadelphia and Baltimore, some of which are of considerable extent, and occupy both sides of the road. The examples of these roads will soon find followers, for the improvement is so great as to commend itself to the most indifferent.

Gardening in Public Institutions.

BY PETER HENDERSON.

A number of the Public Charitable Institutions in all parts of the country have farms, gardens, and even greenhouses are attached, the work required by these being mainly done by the inmates. In some these grounds are exceedingly well managed, and are a source of no little revenue, while others are actually worked at a loss, either from uncongenial soil, or from inefficiency in the management. One of the best managed gardens of this kind that has come under our notice, is that of the State Hospital for the Insane, Mendota, Wisconsin, at present under the superintendence of Dr. D. F. Broughton. Having heard reports of its satisfactory garden management, I recently wrote to Peter P. Schotzka, the intelligent gardener in charge, and obtained the facts here given: The present area under cultivation is about 22 acres, about one-half of which (10 acres) is planted with potatoes, the remainder is devoted to vegetables of almost every kind found in the markets, together with grapes, strawberries, raspberries, melons, etc., all of which are consumed in the Asylum. This Institution numbers nearly 700 persons—about 100 of whom are employees. To supply this large family 8 bushels of strawberries are used at a meal, 250 lbs. of grapes, 150 water-melons, or 300 musk-melons. The market value of the whole garden products in 1879—which was a year far below the average—was $3,572. The expenses were: labor, $1,400; manure, $250; implements, $75; seeds, $75—making $1,800 in all, leaving a net profit of $1,772, or in other words, this sum was saved to the Institution by its growing, instead of buying its vegetables and fruits. But this was not the only advantage, the fruits and vegetables were fresh from the grounds, making them vastly more valuable than if packed and shipped from a distance. But the most important feature of the garden operations at this Asylum is the employment of the patients as workmen; an average of 15 are employed in the summer months, during the growing season, who work on an average six hours each day, and Mr. Schotzka, who is evidently a careful and intelligent observer, assures me that the effect on the health of the patients is most marked. They mainly volunteer, or are kindly coaxed to the work, and this labor in the open air, while it gives them occupation, directs their attention from themselves; the result is, that a greater number of the garden hands have been discharged as cured, in proportion to numbers, than of others.

No greenhouse is yet attached to the Asylum, but Mr. Schotzka manages, by the aid of hot-beds, to fill numerous beds that are laid out in the lawn in front of the hospital, with flowering plants. These he quaintly terms an "eye pasture" for the patients. These beds give flowers enough to form bouquets for the sick wards during the summer months, and thus are a source of great pleasure to scores of the unfortunates within. Believing in the soothing effects of flowers on some species of insanity, a gentleman recently left a fund of $10,000 to be used in building a Winter Garden or Conservatory, to be used as a promenade ground for use of the patients at an Insane Asylum in Ohio.

The successful example of the Mendota Asylum is one well worthy of imitation, and such a garden might be attached with profit to various other kinds

of public institutions, for in nearly all cases the labor could be mainly done by the inmates, not only without cost, but to their physical, meutal, and moral advantage. The grounds surrounding the various public buildings on Blackwells Island, New York, and at Flatbush, Long Island, are, and have been so for many years, models of excellent cultivation, and reflect credit on the management; but there are many others in the suburbs, and hundreds in all sections of the country, where no attempt whatever has been made, and in others it is so feeble that it has amounted to nothing. There is no excuse for this. There are always men fitted to take charge of such work, to be had for moderate salaries, who, with the free labor by the inmates of the institutions, many of whom would like the work, could produce crops that would add vastly to the comfort and health of the inmates, to say nothing of the saving to the county or State.

Census of Forest Trees.

"A chiel's amang you takin' notes," or soon will be among the farmers about the forest-trees, and the care taken of them, and the uses made of them. Professor Sargent, the Special Agent for the Forestry of the Tenth Census, has had printed and widely distributed: *A Catalogue of the Forest Trees of North America*, of 93 pages, including a full index. It is printed on one side of the paper, so that there is a blank leaf facing every page of print. This is for making notes on. The trees are arranged under their natural orders; the botanical name is followed by the English names, then the geographical range is given, then the character of the wood, the size and port of the tree, and the known uses it is put to. If any one knows any of the trees outside of the range assigned to it, or knows any other uses of its timber, its bark, its fruit, etc., or knows any tree particularly remarkable in size or age, or otherwise, he is to make a note of it on the blank page, and send it by mail to Prof. C. S. Sargent, Brookline, Mass. If the sender wants to have his catalogue back again, to keep—as we suppose he generally will—the Professor will return it, or a fresh copy. Every one who can will wish to contribute to the Census Report on American Trees and Forests.

American Yellow-wood.—The Ladies' Garden Club of our Street, taking several horticultural periodicals, some of them English, occasionally get bits of news which are not quite adapted to our meridian, and which therefore puzzle them. For instance, Mr. Burroughs, in "The Garden" (London), for March 6, gives a glowing account of the above named tree, "or rather shrub," as he says, which "commonly attains the hight of 15 to 18 feet," though indeed he does know one more than 30 feet high; and he says "it has handsome yellow flowers." The ladies ask me what all this can mean. For all the old trees here are at least fifty feet high, and the younger ones grow apace, as if not meaning to be left behind. Then they know that the flowers are white, and are a deal handsomer than Mr. Burroughs allows. The meaning of it all is that this noble tree does not get summer enough in England, and hardly ever blossoms there. The author of the article, who says he has seen few specimens there, should have said that he never saw it in blossom; and he probably jumped to the conclusion that the flowers are yellow, because the botanical name is *Virgilia lutea* (or *Cladrastis lutea*), though he might have guessed that the "*lutea*" or yellow referred to the wood. He says he is indebted to a New York paper for the illustrations of the blossoms and seed pods—and they are so poor that they excite the commiseration of the Club. He surely could not have got the yellow from the same source. A. G.

[The Yellow-wood or Virgilia owes so much of its attractiveness to the graceful sweep of its branches, the airy pendulous character of its flower clusters, and its charming and peculiar green, that it is difficult to give an idea of it by an engraving of a small part, as we found when we figured a flower-cluster in the *American Agriculturist* for Nov., 1875. Perhaps, taken for all in all, it is the most beautiful of our native deciduous trees. Yet how few know this most desirable tree at all!—Ed.]

A Garden Reel.

A convenient Reel for holding the line used in garden work, is presented in the accompanying engraving, from a sketch sent us by Mr. R. B. Kidder,

A CHEAP GARDEN REEL.

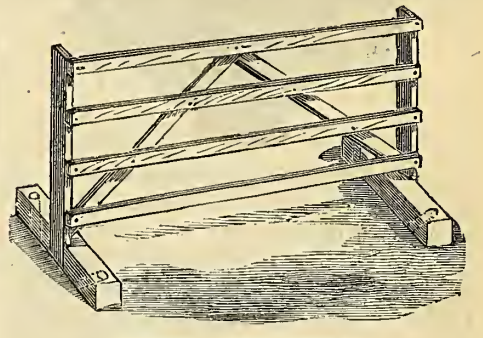
Columbia County, Wis. It can be made to suit the size and amount of cord. Mr. K., in making his, used a piece of inch oak, 4 inches wide and 3 feet long, sharpened at one end. A slot is cut in the top 3 inches wide and 12 inches deep, in which the reel is fastened. The shape of the pieces out of which the reel is made is shown at *a*. The cord is run through a hole one foot from the bottom of the standard, and secured at any place by looping the cord, or a small wooden pin may be used.

The Most Fragrant Honeysuckle.

When we come across a desirable plant, or fruit, we are sometimes in doubt as to the best time for bringing it to the attention of our readers. If we describe the plant or fruit at the time of flowering or ripening, it is likely to be forgotten at the time of planting. On the other hand, if we defer the mention of such things until the planting season, they are very apt to be crowded aside altogether by things that have come up and demand immediate attention. As between the two we think that the best time to notice a plant is when it is in its perfection, whether of flower or fruit. It is a doubt that has occurred to us many times, and especially as we were, about the middle of April, enjoying the fragrance of *Lonicera fragrantissima*, the Most Fragrant Honeysuckle, and considering how we could best make known the merits of so valuable, and yet so unusual, a shrub. This Honeysuckle is one of the bush sorts, a native of the north of China, and though it was introduced over 30 years ago, about the same time with the Weigelias, the Forsythias, and others from the same country, it does not seem to have shared the popularity of its more showy companions. The bush grows 5 or 6 feet high, and as soon as spring fairly opens, its branches are thickly studded with little clusters of nearly white flowers, which appear before the leaves show themselves. The shrub can not be regarded as a very showy one, but when it comes to fragrance, we know of no shrub of its season that equals it in this respect. Not the heavy overpowering fragrance that we often meet with, but that delicate spring odor which some one has aptly called "woodsy," and which we find in such perfection in the Trailing Arbutus—satisfying in itself, and still more delightful in the memories it suggests. For the rest, the shrub is perfectly hardy, and requires no particular care, except perhaps a shortening here and there, when it tends to grow straggling. Let lovers of fine shrubs make a memorandum, to be referred to next planting time, to the effect that no collection of flowering shrubs can be regarded as complete without *Lonicera fragrantissima*.

Another Tomato Trellis.

The above heading implies that we have already given other Tomato Trellises—and we have, a great many, from a rustic lattice-work of rough sticks up to permanent affairs, to be put away when not in use and last for several years. The fact that so many designs have been published, shows that a trellis of some kind is needed. If any of our readers have grown tomatoes without the use of something to support them, we advise them to not let the coming summer go by without a trial of one. Left to themselves, the tomato plants soon fall over, and a large share of the fruit rests upon the ground, often ripening unequally and soon decaying. Aside from the question of neatness, and that in a garden is an important point, the vines, when trained, are more productive, and imperfect fruit may be cut out. For eating raw, there is no comparison between tomatoes ripened upon a trellis, and in the usual way, upon the ground. The fruit, being all in sight, can be gathered at the proper time, and there will be no loss from over-ripening, and no injury to the vines in gathering. Sometimes the tomato plants are trained to a single stake, but other than as a matter of amusement, this is not to be commended, as so much of the plant has to be cut away. It makes but little difference what kind of a trellis is used. Whatever can be most readily constructed will answer, whether of sticks, slats, or wires; it should be strong, as the weight to be supported is considerable; about four feet is a convenient hight, though, if afforded support, the vines will grow much taller than this. Mr. Edmund Johnson, Winnebago Co., Ill., sends a sketch of the trellis here given; as his accompanying letter is an example of what such letters should be—to the point, giving all that is needed, and no more, we give it entire: "Our country gardens generally contain tomatoes, but they are allowed to grow along the ground without support, and thus the yield is very small. I send you a plan of the trellis that I use, and with very satisfactory results. The bases are pieces of 4 by 4 scantling, two feet long. A slanting hole is bored in each end, through which to drive a stout pin to keep the trellis in place. The upright pieces are 4 feet long, and 3 inches wide. The slats are 2 inches wide; 8 feet is a convenient length to make them. The manner of putting together may be seen in the diagram,"—which we may add was as clear as his letter is concise. Whatever kind of trellis is used, let the lower part



ANOTHER TOMATO TRELLIS.

be low enough to allow the plants to be tied to it before they fall down, and be sure to tie them before this happens, as after they have once fallen over it will be difficult to train them. Strips of cotton cloth are convenient to tie with. No other rule can be given than to tie the stems to the trellis where they seem to need it, and to cut away all the shoots that can not be tied without crowding.

Cultivating Water Lilies.

We have several times suggested that those who are fond of the most beautiful Water Lily, or Pond Lily (*Nymphæa odorata*)—as "who is not"—can cultivate it with very little trouble. Those who have hesitated to make the attempt will be encouraged by the following account of its successful treatment, by Miss Ruckman, St. Joseph Co., Ind. Miss R. Writes: "We have a half hogshead in our yard, which is sunk even with the ground. In the bottom is some of the soil taken from the bottom of a little lake where the Water Lilies grow. We put in several roots of the Lily, filled the barrel with water, and then awaited results. The next July we noticed seven small buds on the surface of the water; by the 1st of August, the surface of the tub was a mass of beauty, the large white Lilies being an attraction for the passers-by that could not be resisted. This was three years ago; each year there have been more flowers than in the previous summer. In the fall, we throw a little manure into the tank, place some boards over the top, and with this little bit of trouble increase the beauty of our experiment, which has been a success.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

A Cocoanut Flower Bracket.

The hard shell of the cocoanut in the country where it grows is put to a number of important uses by the natives. To them the cocoanut tree furnishes most of the necessities, and many of the so-called luxuries of their simple and indolent existence. If we should enumerate the uses to which the shell is put it would be a long list, and possibly not without interest; but the point now is to call attention to its employment as a Bracket Pot for the growth of such plants as are usually seen in hanging baskets. The engraving gives an idea of

A NEAT COCOANUT PLANT BRACKET.

the end to be gained. The contents of the shell are removed by taking off a small portion at the top. A bracket board, that is, the back piece of an ordinary ornamental wall bracket, is then attached to it near the middle by means of three screws, which pass through the bracket and into the shell. With a hook or a brass-headed nail driven in a convenient place, the bracket can be hung up, and is ready to be stocked with suitable plants. The whole construction is simple, and with the plants in good order, there are few things in home decoration that are neater, easier to make, and more satisfactory than this same cocoanut shell bracket.

Home Topics.

BY FAITH ROCHESTER.

Early Breakfasts.

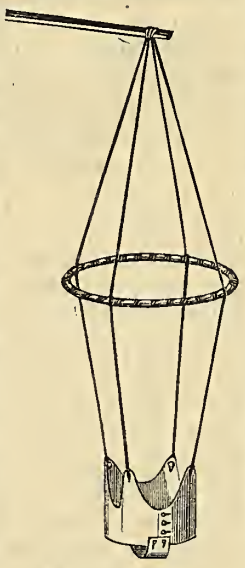
I find macaroni an excellent thing for an early breakfast, the macaroni being boiled the previous day. I learned to use macaroni from the *American Agriculturist*, and it is now a very common dish in our family, and very popular too. The simplest method is the one most used by us. The macaroni is broken into short lengths and thrown into boiling water, boiled with a little salt until quite soft, then turned out into a little stone jar—(how handy these small jars are!) and set aside until next morning. I do not drain it (as the recipe says, and as I tried at first), but the liquor in which the macaroni is boiled forms a jelly when cool and dissolves again when heated in milk. In the morning, heat a pint of milk, a tablespoonful of butter, and a *little* salt and pepper, and turn the macaroni into it to heat, loosening it with your spoon as it heats. We cook about three-fourths of a pound at a time in this way, for a family of six. A little in a tea-cup in a school dinner pail gives great satisfaction. Stewed tomato is a good accompaniment.

Codfish Balls

are another convenient dish for early breakfast—the balls all made ready to fry on the previous day. I speak of them now in order to say that I do not find it necessary to soak the fish over night when I boil it. Wash it well in three or four waters, put it over the fire with a good deal of cold water, let this heat pretty hot (boiling or not), and pour off this water and add more of as high temperature as that poured off. Boil very gently ten or fifteen minutes longer, but be sure that the fish is thoroughly boiled through. Mix the fish (well picked up) and the mashed potatoes while the potato is yet warm, seasoning with butter and (if the weather is not too warm) a little milk. Make into biscuit-shaped balls ready to fry. They should be fried in only just enough hot butter to brown well.

The Baby Jumper.

About five years ago I told all about my baby's jumper, and a picture of the same appeared in the *American Agriculturist*. Another one has served the present baby, giving great enjoyment to all of the family. The first was attached to a long hickory "spring-pole." Perhaps there is nothing better, if you can fasten it securely to the ceiling and give it room to play up and down, passing through some kind of a strong staple placed a few feet from the end of the pole, which is fastened to the ceiling. This time we tried first a spiral bed spring, which we bought for five cents; it worked pretty well for some time and then was broken. A strong rubber band does very nicely; and may be fastened anywhere into the strap from the ceiling by which the jumper is suspended. Perhaps I had better tell once more, briefly, how the jumper is made. The seat in which the baby sits is a strong little jacket with a strap 3 inches wide fastened securely to the bottom of the waist behind, usually cut in the same piece. The waist of the jacket is buttoned together in front, the baby's skirts are laid smoothly, so as to cover and protect its legs like little trousers, and the strap attached to the waist passed between them and buttoned up to the front of the waist. This waist has no sleeves or arm-holes. Instead of meeting over the shoulders, it has four button-holes, two at each shoulder, one in front and one behind. Long straps, with strong buttons on the ends, button into these holes, two at each half arm-hole. These straps suspend the jacket seat, and are kept apart by being wound once around a barrel hoop and fastened there, half way up their length, leaving four even spaces on the hoop between them. The jacket may be as pretty as you like. Mine is made of strong, striped shirting, with a skirt 8 inches deep pleated around it—all bound with turkey-red. The hoop is wound with plain drab calico and turkey-red. The four straps, each about 2 feet long, are made of drab calico, quadruple in thickness. Above all this is the rubber strap and a small hemp rope—the whole is tied to a stout hook screwed through the plaster into a beam overhead.—[We reproduce the cut.]



A BABY JUMPER.

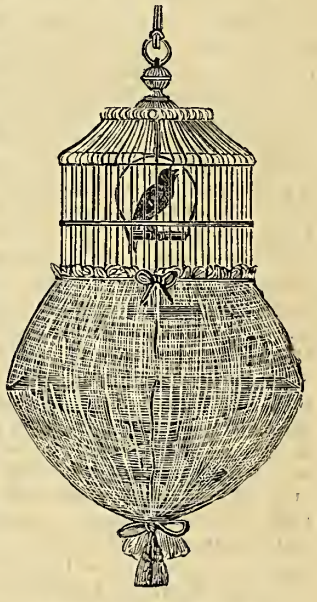
This jumper is an excellent baby tender. We put it up when baby was six months old, but did not use it much until the baby's limbs seemed strong enough to bear his weight, fearing crooked legs as a result. Soon it was just the exercise he needed for strengthening his limbs, and afterwards for helping him to learn to walk. He made unusually rapid progress in learning to run alone, but even after he had the run of the house, he delighted to be put into the jumper, and would go through his funny little gymnastics with great relish.

Little Girls' Underclothes.

A lady asks me how I make the underclothes "for girls eight or ten years old," just the ages I have to work for at present. I have often written on the subject, and my testimony is still the same. Perhaps the lady is a new subscriber to the *American Agriculturist*, and I briefly give the method: A long-sleeved moderately high-necked strong cotton waist, buttoned behind, with whole drawers buttoned to the bottom of this waist, seems most reasonable for moderate weather. Two or three thin, low-necked sleeveless waists are useful for the very hottest weather. The drawers should be large and loose in the seat, the waist loose in every part. Skirts can be buttoned to the same waist by a separate row of buttons. Flannel underclothes are more suitable for winter than now.

A Screen for the Bird Cage.

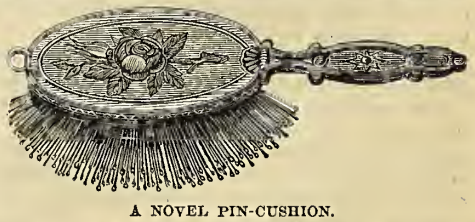
An ordinary Canary bird can make a great deal of work in proportion to its size, if no precautions are taken to keep his litter from being thrown out of the cage. Much of the food given to a caged bird consists of seeds with coarse hulls, and the seed-coats, after the bird has removed the kernel, are light and readily scattered to a considerable distance upon the carpet, table, or whatever may be below the hanging cage. To avoid the trouble of frequent sweeping and dusting, a screen of fine mosquito netting is now used by many lovers of caged pets. The netting—that of a pink color is perhaps the most attractive—is fastened around the cage, about midway between the top and bottom, by means of a ribbon, which can be easily untied when the cage is to be cleaned and the bird fed. The lower portion of the netting is brought together below the cage and also secured by a small tie. This latter does not need to be enclosed, as the netting opens down one side from the top, when the screen is easily removed. The accompanying engraving shows a cage thus decorated—for when neatly done it adds to the beauty of the whole. In the writer's home two birds are thus kept from throwing all sorts of litter upon the surrounding objects, and it is therefore from an actual experience that this cheap and neat screen is recommended for general use as a labor-saving contrivance.



SCREEN FOR BIRD CAGE.

A Novel Pin-Cushion.

An old, broken lamp stand has often served a good purpose as the standard for a very useful, as well as ornamental pin-cushion. So, many other little household articles, that have lost their original usefulness by missing some of their parts, have been put to a new service by some change which the mind of the housewife readily suggests. The case in hand is the construction of a cushion for pins upon the back of a worn out hair brush. A neat cushion is put where the bristles were inserted, into which the pins can be set in a manner to sug-



A NOVEL PIN-CUSHION.

gest the face of the brush when it was new. Such a brush pin-cushion is shown in the accompanying engraving. If further changes are desired a new back can be made by covering the old one with cloth, upon which a design in needlework can be made. A loop may be placed at the upper end, by means of which the cushion can be hung up in a convenient place. The binding around the cushion, and the other parts; in fact, the general make up will allow the exercise of a wide range of taste.

The Sweet Potato Vine.

An easily managed, and at the same time most beautiful vine for the window is that of the common Sweet Potato. The rich, luxuriant foliage of a vigorons vine is not so much appreciated as it ought to be, partly because of the general impression that a food-producing plant is not likely to be ornamental, hence the sweet potato is very little known as a beautiful climber. The treatment of the plant is very simple. A vase or any glass vessel, of convenient size to hold sufficient water, is all that is necessary. Select a good sound sweet potato, of a size that it will rest upon the edges of the vessel, while the lower end dips into the water. The plant being of tropical origin, a good degree of heat is required for its best development; a temperature of about 80 degrees is best. When once started, and given a plenty of light so soon as the leaves are putting forth, a handsome living, growing, window ornament may he produced. It is better to have a few strong and vigorous shoots than a mass of inferior ones; therefore if many shoots start, remove all but a few of the best. When the vines begin to grow well, they should be provided with a support, and trained entirely around the window, some of the shoots passing up one side, and some the other. A pretty ornament may be made by letting all shoots grow that will, and allow them to flow over the sides of the vase and hang down in a graceful manner. The chief care will be to keep up the regular supply of water which the plant will require in considerable quantity, as it is a vigorous grower, and to keep the leaves free of dust.

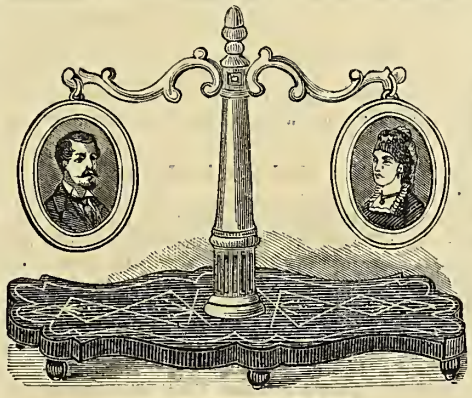
How to Make a Flag.

"H. C. M.," Rockland Co., N. Y., who is probably inspired by the approach of the 4th of July and its associations, writes to ask how to make a flag, and adds that "it will be of interest to all your readers that love the American Flag." In the first place the material for a flag for service is *Bunting*, a thin fabric of wool, made especially for the purpose. This is light and strong, and bears the constant whipping by the wind better than any other material. Flags for certain uses are made of silk, and if for merely decorative purposes may be made of any desired stuff. The flag consists of two parts, the *Field* and the *Union*. According to the regulations, the depth of a flag should be $^{10}/_{19}$ths of its width. In ordinary usage, half as broad as long will come near enough. The depth of a flag is called its *head*, and its length, from the staff outward, the *fly*. The *Field* consists of 13 stripes of red and white, standing for the 13 original States, beginning at the top with red. The *Union* is in the upper corner next the staff. It is seven stripes deep, and four-tenths the length of the field; it is blue, with white stars, one for each State of the Union. We do not know if there is any regulation for the size of the stars. Formerly the small stars were grouped to form one large star on the blue field of the *Union*, but now the regulation is that they shall be "in equidistant horizontal and vertical lines." The better way to fix upon the size for the stars is to first make a paper pattern; cut the stars from paper, and change the size until the proportion seems right. Recollect that a star should always be five-pointed, with one point pointing upwards. We hope that these dimensions will help "H. C. M." and many others to make a handsome American Flag, and, "Long may it wave."

Cooking Spinach and other Greens.—Bacon and Greens, or "Gammon and Spinnidge," as the old writers have it, is a combination not to be commended. In the old way of cooking greens with a piece of bacon or pork, not only is their delicacy of flavor lost—an important matter with Spinach—but the greens themselves become so thoroughly impregnated with fat as to be indigestable by most persons. The proper way with Spinach is, after washing and picking over carefully, to put it into a plenty of boiling water and allow it to cook, with the cover off, until tender; usually about half an hour. Then drain, chop fine, and place in a saucepan on the stove with a gencrous lump of butter until quite hot, then serve. Dandelions and other greens treated in this manner are greatly improved.

A Balance Picture Holder.

It was several years ago that the modern view of matrimony (?) was illustrated in pasteboard needle-



A BALANCE PICTURE HOLDER.

work in so many parlors and sitting-rooms. A heart—human, it was understood—was placed in one scale pan, and a dime, or even an old-fashioned three-cent piece, in the other, of a balance that did not balance—the great heart being too little to overcome the weight and therefore importance of the coin. The illustration of the Balance Picture Holder may suggest that old household ornament. As far as being a balance goes, it is a deception, but looked at in the light of a neat picture holder, it is undoubtedly a pleasing success. In the picture balance there are no scale pans, and the arm of the balance is stationary. It may be made to move as in a regular balance, but it will not be found as satisfactory as when made immovable. The bottom may be made of any nice piece of wood, and worked into any shape desired. The same may be said of the standard and the arms. In the choice of pictures it will naturally suggest itself that they should, in a certain sense, be balanced. Some may prefer to put the extremes of age against each other, as the grey-haired and venerable grandparent, and the latest new comer into the family. Again, others may wish to show the power of contrast in the extremes of beauty; in fact, there are many views to take in the matter of striking a balance in an instrument like this, and that question must be settled—and it is not difficult—in its own way to suit each individual case.

Around the House.—The men folk are generally annoyed at the sight of untidiness when it is within the house, but are frequently oblivious to the same when it is out-of-doors. It does not matter whether the occupant of the house owns the grounds or not, the surroundings should always be neat and attractive. No one gets so much satisfaction from a clean door-yard as the person who passes through it in going out and coming in, at least twice a day, and in most cases many more—the one who lives in the house. It is a false principle to "clean up" for the sake of the impression it will make upon a chance comer or passer-by. If there is any time above all others when the door-yard should be "put to rights," that time is when the grass is starting, when the flower beds are to be arranged, and the work of the hands of man is followed by the first, vernal activities of nature. But all through the season, an hour now and then in the yard pays well. The great excuse is the lack of time; but the busiest man has hours that he can spend in making the surrounding of the home look tidy; and the hours thus spent will be a recreation. It is the little matters of detail that count so much, the one way or the other, in the general appearance of a home. Be neat around as well as in the house for its own sake.

Home-Made Feather Duster.

A Feather Duster is an article, the convenience of which every housewife appreciates, but it is often too expensive for many farmers to buy. For all such, some hints as to how a duster of equal utility and durability to a store one may be made at home from the feathers that would otherwise go to waste, may be useful. If beauty is not sought, any round stick of the proper size, such as the end of a broom handle, will serve for the handle of the brush; if one happens to have an old duster handle that can be used once more. With a saw make a series of grooves or deep notches in the lower end of the handle. By the aid of a hammer the lower portion of each quill should be so flattened as to pass into the grooves. As fast as the feathers are put in they should be tied with strong twine; and as the work proceeds glue should be added, that the feathers may be the more firmly fastened. In this way new rows of feathers, followed by the twine and glue, may be added, until the end is completely covered and the duster is of sufficient size, after which the finishing row of large feathers, selected for the purpose, is placed around the whole, and tightly bound with twine. Outside of the base of this last row of feathers, a neat strip of leather may be glued to both improve the appearance and render the feathers more secure. A brush thus made, will serve all the purposes of a purchased one, and if the work is carefully and thoroughly done, it may present as neat an appearance.

A Cheap Glue Pot.

Glue would be much more largely used in the household when a break occurs in the furniture, and many other articles, if there was an easily worked glue pot at hand. A glue pot need not be expensive, as the one in figure 1 goes to show. Two tin fruit cans—one of the most common things to be found around the house now-a-days—a larger sized one for the water vessel, and a smaller one for the glue, is all that is necessary. The larger can is opened at one end, and the strips of tin turned back to make an opening, into which the smaller one fits closely, as shown in figure 1. The bails are added for convenience in handling, but are not essential to the make-up of the glue pot. A second form is shown in figure 2, in which the same sized cans are used, but the top is entirely removed from the larger one, and the glue can is held up from the bottom by a tripod of twisted wire, passing around the small can just below the rim, the ends resting on the upper edge of the water vessel. This is the extreme of simplicity in a glue pot; but at the same time it is complete. With the two cans and a bit of wire, the construction of this useful household affair is only a matter of a very few minutes. Let us have one.

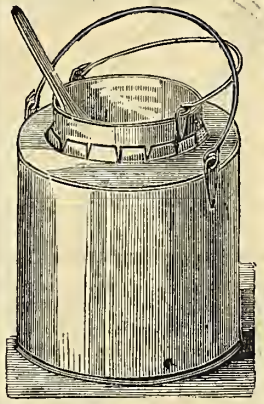


Fig. 1.—CHEAP GLUE POT.

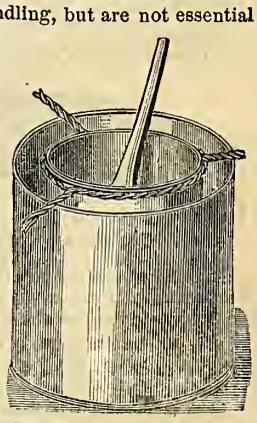


Fig. 2.—GLUE POT WITH WIRE.

BOYS & GIRLS' COLUMNS.

The Doctor's Talks.

Having built our kite, the next thing is to get it up. Before undertaking to fly a kite, be sure that your string is so wound that it will run off without any trouble or hitches; there is always danger of this with a ball of twine, therefore it is always best to have it wound upon a stick, and every boy knows how to do that. Having the tail so wound that it will not get tangled, we go to an open place, where there are no trees, telegraph wires, or anything else in the way, and we are ready

TO FLY THE KITE.

Some boys make a great fuss about throwing up the kite, and think that success depends upon throwing it just at the right time. I don't know how it may be with other kites, but the bow-kite, the only one that I know much about, does not need to be thrown up. Spread out the tail in front of the kite, which has its point on the ground, letting one hold it upright. The string being securely tied to the belly-band, let off several yards of twine, and start and run against the wind, letting off string as you go. With a good kite and a fair breeze, it should go up without any fuss. Then the rest of the twine can be played out. If you run, holding the string from the kite, it will rise higher. If you go towards the kite, thus slackening the string, it will begin to fall.

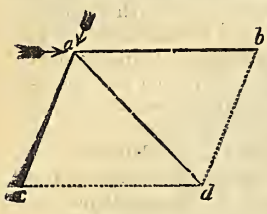


Figure 1.

WHAT MAKES THE KITE GO UP?

We have seen how it goes up, and now wish to know what laws of motion are concerned. Here we must state a law that has not been given in these "Talks." It is this: When a body is acted upon by two equal forces, tending to carry it in different directions, it will take a course intermediate between the two. For example: if

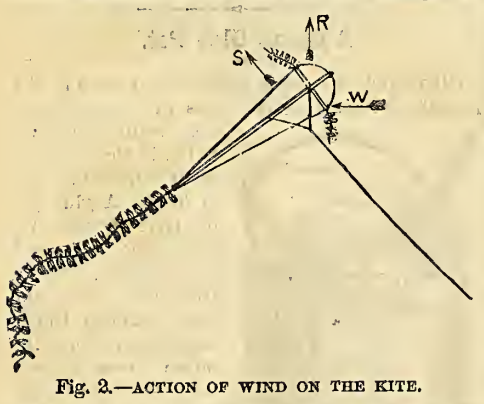


Fig. 2.—ACTION OF WIND ON THE KITE.

a ball was struck by two different forces, as shown by the arrows, fig 1, one tending to carry it from *a* to *b*, and the other from *a* to *c*, it would move from *a* to *d*, in a diagonal of a parallelogram, of which *a*, *b*, and *a*, *c*, are two sides. Now to apply this principle to the kite. In the first place, what forces are concerned in kite-flying? The wind you may think is the only force. But what happens when you go towards the kite? It falls, you know. It is plain that in this case the string is a force. We have then the wind, which tends to carry off the kite in one direction and the string that tends to hold it in another, and between the two forces the kite rises. In the diagram, figure 2, a kite is shown edgewise. The direction

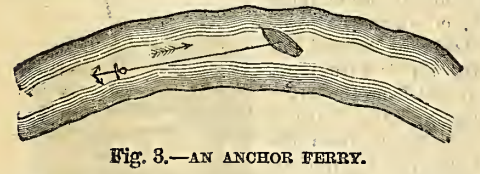


Fig. 3.—AN ANCHOR FERRY.

of the wind is indicated by the arrow, *W*, and the restraining force of the string by *S*. The result of the two forces is in the direction of *R*. Thus we may see that

THE KITE RISES IN THE AIR,

as the result of two forces acting upon it, the wind and the string. The motion resulting from two different forces is made useful in various ways, as is in some kinds of ferries, one of which is shown in figure 3. Here the boat is anchored by means of a long rope. If the boat stood square across the stream, it would remain at rest, but the rope is so attached that it turns obliquely to the stream, the force of which tending in one direction and the rope in the other, the boat takes a direction between the two, and is carried to the other side. I once crossed a ferry in Texas which operated on the same principle. A stout cable was stretched across the river from bank to bank. On this cable ran two pullies, to which smaller ropes were attached, one of these ropes being hitched to the front and the other to the rear end of a large flat-boat. The rope at the rear end being let out, to place the boat obliquely to the cable, the boat was, by the force of the current, slowly carried over to

Fig. 4.—ROPE AND FLAT-BOAT FERRY.

the other side. The working of such a ferry is shown in figure 4. The cable or strong wire, *a*, stretches between the two banks, the flat-boat or scow, *b*, is fastened by ropes to the pulleys, *c*, and *d*, which run along upon the cable. If the rope at one end is let out, so as to allow the boat to stand obliquely across the stream, the force of the current will carry it across. To return, the rear rope has only to be shortened and the other let out, to reverse the position, and the boat will go across in the other direction.

The Baby Elephant.

We remember the first elephant we ever saw. Though we were but a boy of seven years, the day that we saw this great animal is fresh in the memory, and like the same event in the early life of thousands of children, it will never grow dim. There is something about an elephant that is impressive, and when you add to that the fact that a man sat on the elephant's tusks and put his head right into its mouth, the sight becomes so terribly new, that one does not forget it. But all great, big, strong elephants were once small—if elephants can be said to be small—and have their days of helpless infancy. Such a little baby elephant has recently been born in Philadelphia, and it is the first one that is known to have been born in the United States. This is not the native home of the elephant, and when brought here it is only for the purpose of helping to make up a show of wild animals. In the wilds of Africa, baby elephants are common; and they are usually taken from their wild state while quite young. The little new comer is the offspring of "Mandrie," the father elephant, who is 26 years old and weighs 8,000 pounds, and "Hebe," the mother, 23 years old and weighing 7,020 pounds. The calf at birth weighed 213¼ pounds, and stood about three feet high. The birth of the elephant babe was the occasion of great excitement among the other animals of the menagerie, and the mother became so alarmed at the roaring of the lions and the noise of the tigers, etc., that she rolled over violently on the ground and did all in her power to protect her calf from supposed danger. She is so fond of her little one that she is extremely jealous of strangers, and will not allow her old pet dogs to come near her. The little elephant is very friendly to visitors, poking its slender trunk into pockets and up sleeves, to the delight of all. The other elephants of the herd caress it fondly, which flatters the proud mother of the first genuine baby elephant of the United States.

Farming in Connecticut.

BY G. H. "AND THREE OTHER BOYS."

The great number of run-down or half-worked farms in old Connecticut now offered for sale would make it an inducement for any person who cares for some independence to try to become the owner of one, as many of them can be bought for less than the buildings on them are worth. Knowing this, we concluded to have a little actual experience in the matter. We have now been on this farm one year. We came from the City, and were rather obliged to come, so as to get something to live on, as we were out of business and about out of money. The man of whom we got the farm did but little on it, and many of the lots were full of weeds and briers. He had less than two acres planted, so the farm had not been made poor by plowing. Most of the land was in good condition, but needed working and seeding. We have tried a variety of crops. We plowed four acres once, but plowed it well, then harrowed and sowed it with buckwheat, harrowing in the seed, and we had fifty bushels, though we used no manure.

When we first commenced to plow in the spring for corn, we had a pair of horses that went so fast that we could hardly keep up with them, and so we plowed wide furrows to finish as soon as we could, and we had a big job in hoeing, but we dug and worked and got a good crop of corn. We use oxen now, as we like them better in this heavy soil than the horses, which are mostly used here. We raised some potatoes, enough to eat and for seed, and they are good ones. We planted in the furrow, as most of the farmers do here, that is, turn over the land, harrow, furrow out, drop in the furrow, and cover with the plow. We had the best potatoes on turf land used in that way. This year we are going to ridge up some corn land, and try some potatoes in that way. We planted some peas, and had an abundance of fresh sweet ones to eat, not much like those had in the city. This winter we have got out a big lot of pea-brush, and are going to put in several bushels, as the boys intend to sell some (we mean three boys and one man). Before we came here a part of the garden had been mowed, the weeds were so big, but we manured it well, plowed deep, and planted in rows 3 feet apart, and then we cultivated and hoed until we had no weeds, but such a crop of vegetables as this old garden never raised before, enough for us and the neighbors, and such lettuce, cucumbers, tomatoes, beans, beets, sweet corn, parsnips, cabbage, etc., etc.! We have enlarged the garden, and intend to plant some small fruits—strawberries, raspberries, etc., as it takes more time to hunt up the poor ones in the lots than it will to have them handy when wanted; and then the sight of them when growing is about as good as the eating. We are also going to set some small fruits in the field, and mean to have some to sell, as there are several good markets near, and the boys prove to be very good peddlers. On some turf land turned over and harrowed, we raised several hundred bushels of hard or Swedish turnips, some we sold, and we are now feeding the rest of them to the cattle, without cutting—it takes them longer to eat them, but they never get choked. We raised some cabbages and covered them in furrows in the field, and they kept well and sell quick, and we shall set a large piece of them this year. Our corn we cut up at the bottom, and it is fun for the boys to run it through the feed cutter. We started a manure heap after Harris' method, and have kept up a good heat all winter, and we have a big pile of it now for corn and other crops. We have sown a piece of winter wheat, and several acres of rye, and both look well. We have plowed since March came in, and shall try some fertilizers this year. We have a good flock of hens, and fresh eggs are very handy and good, both to eat and to exchange for groceries, and we are going to see if ninety acres of run-down land will not support three girls and four boys in old Connecticut.

Our Puzzle-Box.

NUMERICAL ENIGMA.

I am composed of 29 letters:
My 24, 9, 18, 15, was an eminent Geologist.
My 6, 17, 21, 2, was an ancient Patriarch.
My 15, 4, 17, 28, is one of the heavenly orbs.
My 25, 16, 9, is a woman's name.
My 4, 27, 24, 7, was an ancient city of Asia Minor.
My 24, 29, 22, 1, 21, is the name of a Greek letter.
My 19, 5, 28, existing from eternity.
My 23, 3, 26, 29, expresses a numeral.
My 11, 10, 13, 1, 7, is a musical instrument.
My 20, 21, 12, is an exclamation denoting surprise or joy.
My 8 you will find in Joshua.
My whole is a quotation from Dryden.

HERA OLEA PHAROS.

ANAGRAMS.

1. Ruin at last.
2. Shan't miss tape.
3. Saul got lace.
4. O yes! grunt.
5. Do rub seven.
6. Decent shrews.
7. Give a net.
8. Second credit.
9. Need my ax.
10. Very idle.

CHANGES.

(Fill the following blanks with words pronounced alike, but of different meanings.—*Example.* She——the child to the store with one——. *Sent, cent.*

1. The——was found taking the——.
2. The——walked back and forth on the——for exercise.
3. ——very often decorates——.
4. Her——tried to——her.
5. She——him——the child.
6. I can——loosen that——.

TRANSPOSITIONS.

1. Transpose a fish into a verb.
2. A woman into a verb.
3. Some real estate into a verb.
4. A small animal into a verb.
5. An article of apparel into a verb.
6. An insect into a verb.

(Each of the six is a word of four letters.)

ALPHABETICAL ARITHMETIC.

W H N C) S N F D O H I E) W H C C D
S H C E
N W C O H
N E H O D
N W S C I
N E H O D
N I S E E
N I H I C
I W I

ANIMALS ENIGMATICALLY EXPRESSED.

1. Part of a vessel, an exclamation and a title.
2. An animal, an article, and a mass of earth.
3. Part of the body, an unpleasant sensation, and an article.
4. Part of the body, a river, a kitchen utensil, an article, and a confession.
5. A vessel, an article, and the head of a river.
6. A title and an instrument.
7. A sign and a consonant
8. A verb and a preposition.

HALF SQUARE.

1. A famous valley.
2. Name of three towns in Italy.
3. To separate (*vide* Webster).
4. A city in Portugal.
5. A river in Liberia.
6. A river in Europe.
7. A preposition.
8. A vowel.

NEMO.

PUZZLE.

Take four-fifths of a dozen, and strange though it seem,
'Tis enough to go all round the earth:
Should you ask me its value, I'm sorry to say
I really don't know what 'tis worth.

COUNTIES IN GEORGIA ENIGMATICALLY EXPRESSED.

1. Something constantly sought, and a weight.
2. Something that one hears less of in February than in any other month, and part of an animal.
3. Something we have been recommended not to get into, and cunning.
4. A military term, and what many of us do not like to hear in the early morning.
5. The remark that sometimes follows the above disagreeable sound.
6. A vehicle and a list of names.
7. Part of a bird, and part of a river.
8. What none wish to be, and what all wish to do.

CONCEALED NAMES OF POETS.

1. Bob, row nearer to the shore.
2. I can't Mae. O keep still! there's a duck.
3. It is a cow, perhaps.
4. Is this cottage for sale, I wonder?
5. Would you call that dog a yellow one?
6. Sit down on that log and wait for me.
7. Under the willow, Ella.
8. I shall stay until you return.

DECAPITATION.

Entire I am a certain movement of an army, behead me and you may sometimes see me under a bridge. Transpose the last and I burn. Transpose the whole and I delight; now behead me and I do mischief; once more behead me and you may see the very thing that did the damage; transpose this and see more harm.

SCATTERED SQUARE WORDS.

Find more than five square words in the well-known stanza.

"Little Bo-peep has lost her sheep
And doesn't know where to find them;
Let them alone, they're sure to come home,
With all their tails behind them."

(From the letters in the first line you may make such words as POST, BALE, SORT, BEAT, and others; from the letters of the second line may be made other words of four letters, and so with the third and fourth lines. The first word of the "square" must be found in the first line of the stanza, the second word in the second line, the third word in the third line, and the fourth word in the fourth line. You must have, at least, two new words in each square.)

DOUBLE ACROSTIC.

1. A common exclamation.
2. A mason's tool.
3. Part of a ship.
4. A precious stone.
5. A French coin.

The primals and finals name an American officer of the Revolutionary war. ISOLA.

CROSS-WORD.

My first is in coffee but not in tea,
My next is in river but not in sea,
My third is in finger but not in thumb,
My fourth is in apple but not in plum,
My fifth is in pantry but not in shelf,
My sixth is in plunder but not in pelf,
My seventh is in swoon but not in faint,
My eighth is in varnish but not in paint,
My ninth is in swim but not in float,
My tenth is in ship but not in boat:
Life were sad without my whole,
It comforts many a weary soul.

ANSWERS TO PUZZLES IN THE APRIL NUMBER.

WORD-MAKING PUZZLE.—1. Add the letter U, to the word "engine," transpose into "genuine." 2. Shirt, thirst. 3. Dread, madder. 4. Love, novel. 5. Tale, valet. 6. Pernsal, pleasure. 7. Cant, antic. 8. Suet, upset.

CROSS-WORD.—Frontispiece.

NUMERICAL ENIGMAS.—1. Threshing machine.—2. Local option.

ANAGRAMS.	SQUARE WORD.
1. Waylaid. 6. Leniency.	D A V I S
2. Mullein. 7. Interpolate.	A B I D E
3. Doughnuts. 8. Abeyance.	V I O L A
4. Castaway. 9. Unalloyed.	I D L E R
5. Beforehand. 10. Partisan.	S E A R S

CONCEALED INSECTS.—1. Gnat. 2. Bug. 3. Ant. 4. Grub 5. Fly.

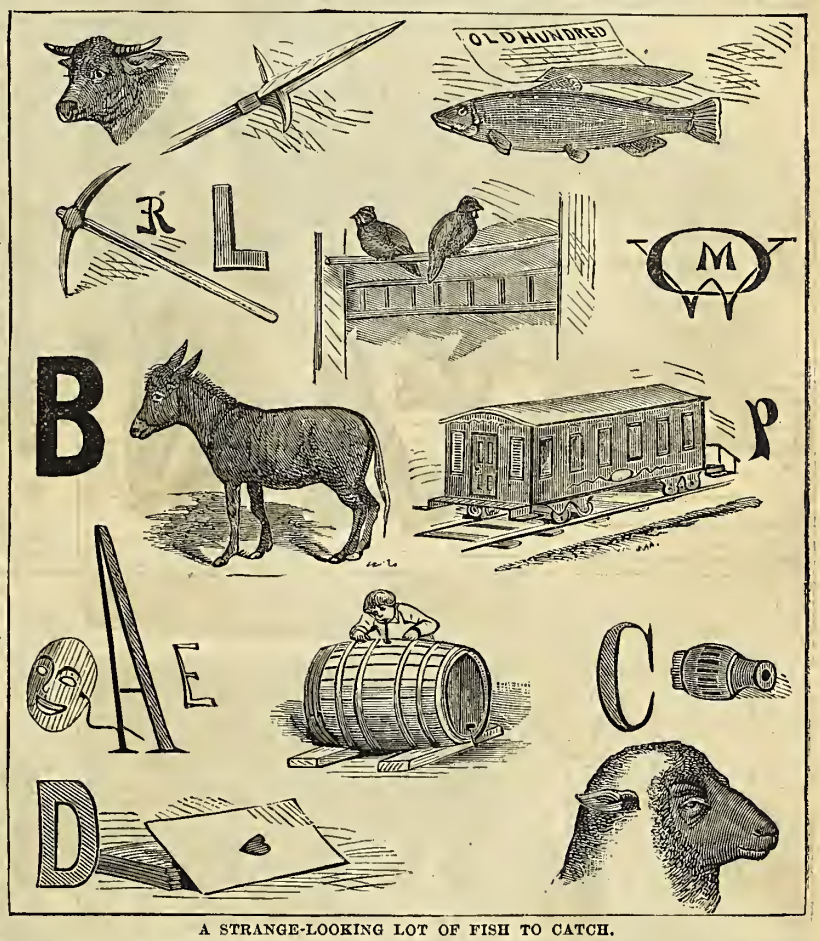
PI.—The Royal Library of Paris contains two million volumes and objects of every description. The regular annual increase is twenty thousand. Nearly half a million books are French history, only twenty thousand English history; theology numbers 200,000, and in science and philosophy there are ninety thousand volumes. Printed, systematic catalogues furnished.

ILLUSTRATED REBUS, No. 475.—Experience increases our wisdom, but don't reduce our follies.

No. 477. Illustrated Rebus.—A truth that is easier to work out in a rebus like this than to keep constantly in view in every-day life.

A New Kind of Fishing.

Last month, the boys and girls will remember, we had a sort of a fish story, but we had but very little to say about the kinds of fish that were caught. In the accompanying picture—which we will imagine is a lake, or even an ocean—there are ten different kinds of fish. It is our work to help the readers catch these members of the finny tribe—in other words, to *get them out* by hook or crook, or any other way. Let us begin with the smallest, though not the least important, as many an old fisherman will say, and with it as a sort of bait—it is frequently used as such—try and catch the others. Again, we should first capture this little fellow, because boys and girls are most accustomed to catching them, and that too in ponds too small for larger fish to live in.—No. 2 is a fish that is very fond of No. 1. It is scarcely necessary to remark that this fish is larger than the one we have already caught, and put upon the hook—so to speak—for the second. This fishing is on the principle that "big fish eat up the little ones." The one we are now after is olive-green on the back and nearly white on the underside, and is about a foot in length. The most common method of catching it is by trolling—the bait being kept in motion by a slow rowing of the boat. It is common, and the favorite fish for catching, in such large lakes as Champlain, George, etc. Lake Erie abounds in them.—No. 3 is a common freshwater fish, varying greatly in size, but usually not over a foot in length. It differs from most fish found in the same places, in having no scales; it has a head of great size as compared with the body, and peculiar soft horns around the mouth, and stiff spines on the fins that have hurt many a young fisherman. For catching this fish you need a great, big bit of bait, as a piece of meat, to which more than one fish may fasten itself and be brought in. They have very few bones, and are good eating besides.—No. 4 is a long slender fish, with a head and mouth in shape resembling that of a duck. It is too large to be caught by the ordinary method of fishing with a still hook baited with a worm. It is so fond of small fish that it will quickly take one even when a hook is fastened in the little fellow's back.—No. 5 so much resembles the one just mentioned that it is placed in the same family. Fishes, like other animals, have their first, second, and third cousins, etc. No 5 is a noted fish; fine both for food and the sport there is in catching it. Some fish go in schools; this one keeps out of them, and is usually found alone. Other fish avoid it, for to be near it may mean sudden death. This fish is fond of shady places among the grass in fresh water streams. Trolling for this fish in the biting season—the spring—is very exciting, and much loved by sporting fishers. A number of rules must be observed in safely landing one of these long, slender, greenish fish. When once safely on the hook, do not be in a hurry to get him out of the water.—No. 6 is probably the most common fish in the lakes, large and small, throughout the country. It is generally small, weighing from a half to three-quarters of a pound. The head is small and tapering; back olive-brown, sides belted with yellow, white underneath. The usual bait is the angle worm. They may be caught at all seasons of the year. On account of the spiny back fin, this fish is not so largely eaten by the "big fish."—No. 7, as the fishermen say, "don't bite," and if caught at all must be in a net or with a spear. It is the habit of this fish to run up small streams in the spring to spawn—that is, lay their eggs—and return to the lakes for the rest of the season. While in the shallow streams they are often speared in great numbers, especially at night, when a torch or large lantern is used to furnish light.—No. 8 is a large fish, growing from one to over three feet in length, and from five to seventy-five pounds in weight. It's name is correspondingly long, and spelled in a dozen or more ways. Nos. 8 and 5 are much alike, and are to be caught in the same way. The Indians have told some wonderful stories about this fish, only equalled by those of the white-faced explorers of the northern lakes and rivers, where it abounds.—No. 9. We must go to the ocean, or at least, salt water, for this fish. The form of the face, which is somewhat smutty, is supposed to resemble that of a sheep, as also do the teeth. A clam, shell and all, is sometimes put on the hook as a bait for this fish.—No. 10. A common small and exceedingly shy fish. The head is large, back greenish, sides silvery. Frequently taken through the ice in winter with hooks baited with cheese. The same name is unfortunately given to a number of kinds of fish.—No. 11 is found in the deep clear water of quiet streams. A very lively fish, moving in shoals or schools. It seldom exceeds a pound in weight. A "horned" variety is common in many streams, the head having spiny projections upon it.—No. 12. One of the oldest of the historical food fish, and one that is now being introduced into cultivation from Germany by our Government. No fish, excepting the gold fish, has been so extensively transported and grown in artificial ponds and lakes as this.—No. 13 is the last and the best of the list as a food fish. The flesh is reddish in color; the sides are sprinkled with spots. A large fish, from two to five feet in length, and inhabiting rivers, the Great Lakes and many smaller ones.



A STRANGE-LOOKING LOT OF FISH TO CATCH.

A Small Boy's Essay on Corn.

Some smart boy has been sitting up late nights when all the rest of the family thought him sound asleep and has produced an essay on corn, from which we take a few extracts: "Corns are of two kinds—vegetable and animal. Vegetable corns grow in rows; animal corn grows on toes....It is said that gophers like corns; but persons having corns do not like to "go fur" if they can help it. Corns have kernels, and some Colonels have corns....Another kind of corn is the acorn; this kind grows on oaks; but there is no *hoax* about the corn..... Folks that have corns sometimes send for the doctor, and if the doctor himself is corned, he probably wont do so well as if he isn't. The doctors say that corns are produced by tight boots and shoes, which is probably the reason why, when a man is tight, they say he is corned." There is a considerable more of this essay, but we have only selected enough to show that the lad has a corner on the corn question, and has doubtless been feeding on corn cakes, corn dodgers, etc., or reading about that fabulous horse-like animal with a single horn—the unicorn.

Shearing His First Sheep.

There are certain things in the life of the farmer boy that are events in his existeuee: places in his pathway up to manhood which, when passed, mark his progress. Just as in a school there are examinations through which the scholar must pass, so on the farm, there are practical tests to he applied to determine the ahility and streugth of the aspiring youth. In those places where wool-growing is an important feature of the farm, the shearing of his first sheep is an accomplishment to which the boy looks forward as a sort of line which divides the youth from the man. Were it not for a seeming selfishness I would relate my first experience in this matter; hut will step aside and let a near neighbor, Samuel Brown—"Sammy" we called him—be the hero of the story. Sammy was a boy with large idcas. He liked to do great things, or at least was fond of talking of the wonderful things he would do some day. I like all this in boys if it does not make them dizzy—does not make them think they are wiser and bigger than they really are—does not make them at a rather early age think what they do not know is not of any very great importanee. Failures in all ages of life have their good lessons, but perhaps at no time do they teach so much as in youth. Sammy, to use a homely expression, was "growing very fast," and talked—and that boastfully, of his ability to do great things. And now for the sheep-shearing trials of Master Brown.

The artist has helped to make the matter plain with a series of four illustrations, showing as many different stages in the progress of the work—for it was work. In the upper left-hand corner we have a familiar scene on many a barn-floor in June. The shearers are at work busily taking the coat of a year's growth from the sheep, some of which may have become used to the uncomfortahle situation through the experience of former years, while others find it a new and unenjoyable process throngh which they are forced to pass. Sheep-shearing, though done by the kindest and best shearers, is not altogether pleasant for the sheep; but when we remember what a relief it must he to them in the hot weather that follows, they are the gainers after all by the process of losing their wool. Sammy is standing in the foreground and is evidently in the last stages of an animated speech in favor of his own ahility to shear a sheep—a statement which the other shearers are not quick to accept. With a flourish of the shears, which he has seleeted for his work, he loudly declares his intentions, and the older and wiser heads, seeing that persuasion is of no use, give each other the wink, and the youth, aspiring for honors at the point of the shears, boastfully selects out his "victim" from the flock. The next scene lets us into the struggles which Master Brown experiences in hringing his sheep to the proper place upon the floor. Sheep, as well as other animals, are more powerful and less easily controlled sometimes than it would at first sight appear—and it is on this account that some of the most important instruction—the most useful knowledge—comes from personal contact—a grappling with the subject. The yonng shearer was, even in this stage of the shearing process, gaining a knowledge of the strength of sheep muscle, guided hy a stubborn sheep's will, that he never had hefore. Under the circnmstances it would not be expected that Sammy would receive any assistance from the men, so long as it was so loudly and boastfully disclaimed but a few moments before. From the third picture it is evident that the unwilling sheep was finally brought to a convenient place for shearing, and the process of unrobing the frightened animal was began, doubtless under a number of serious difficulties which Samnel never before saw in their true light. "A looker on may see most of the game," but it is one thing to *see* and another to *play* the game. The process of sheep shearing had been observed so many times that the youth felt he knew it all, and had not heen slow to make the feeling known. Of course the artist cannot represent and do full justiee to the kicking and pulling and squirmiug on the part of the unfortunate sheep, and the sweating and struggling of the still more unfortuuate boy; hut he has shown how matters shaped themselves in that final contest for freedom when the "victim" becamc the victor, and the young shearer literally took a back seat upon the floor. It was a hard struggle,—a battle,—in which the odds were against the boy; a conflict of muscle in which the weakest went to the wall, and the strongest to the open yard, dragging what little wool with him that the ill-guided shears had imperfectly clipped from his much-cut skin. The fourth and last scene speaks for itself. The men, with a sense of mingled mirth and pity, appreciate the miserable state of mind and body of the heaten boy as he sits in sadness and silence, and watches without a word the easy stroke of the skilled shearer as he finishes the sheep that would not he sheared hy a boy.

FOUR SCENES IN AN IMPORTANT DAY OF A FARMER BOY'S LIFE.

This accounnt of Master Brown's trouble may seem hard on the boys; bnt there is a lesson in it, and that is just the reason why I tell it to the many hoys—and it may not hurt the girls—of the *American Agriculturist* family. Sammy was made better by his unsnccessful attempt to shear a sheep hefore he was old enough to hold one. The experiment was a great success, hecause it tanght him his strength and his place in the distrihution of farm lahor. I have heen a hoy, and, just like the great mass of them, and I know that when a boy gets above his work, he must come down, and the higher he gets the greater the fall must be. I could plow as well as the hired man until—the plow struck that stone. Don't I remember it well! and then I could do little else than cry. The desire to rise to the dignity and strength of manhood is worthy of only the highest praise—and ever effort should point in that direction. It is only when the youth over-estimates his powers, and that to the annoyance of those of whom he might, but will not, learn, that the experience of Sammy will come. Sammy got a great deal that was of value to him out of his sheep shearing struggle. In some shape or other we all try to shear our first sheep.

UNCLE HAL.

GOOD FERTILIZERS.

We have again and again advised the farmers of the country to make a more liberal use of standard fertilizers if they would expect to increase their crops. Those who have experimented judiciously in this direction have seen no reason whatever to regret it. The foreign demand for our cereals seems likely to increase year by year Business is recovering in all parts of the world, and, whether the nations are at peace or not, there will, in all probability, be a steadily increasing demand for our breadstuffs. In some sections of the country farmers are straining every nerve to increase their productions. They seek the best fertilizers, the best labor-saving machinery, and the best information they can get to help them in their special vocation; and during the next decade we predict that those who skillfully till the soil will do the best and safest business in the country. There are many kinds of good fertilizers—many kinds which are known to be exactly what are wanted by all farmers. We have recently taken special pains to inquire about the Michigan Carbon Works, at Detroit. This concern has an honorable standing and record. It is responsible and its statements are reliable. Its managers are well-known business men, and what they say they mean. We believe they are making a first-rate fertilizer, and that its general use would be a great benefit to the public. We advise all our readers who are interested in the matter to address the Company for further and full particulars in regard to what they specially offer.—*N. Y. Independent.*

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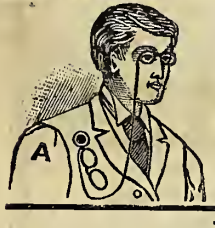

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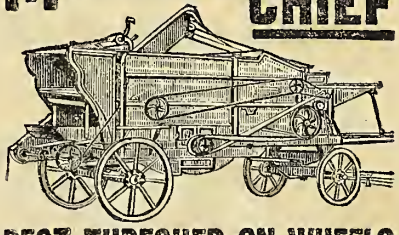

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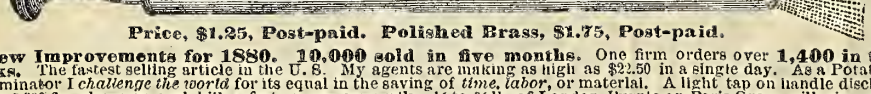

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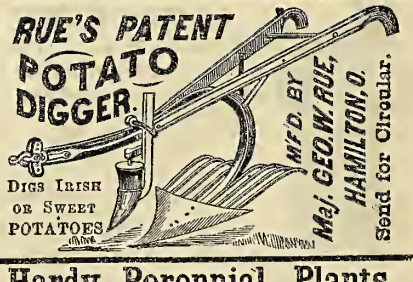
New Improvements for 1880. 10,000 sold in five months. One firm orders over **1,400 in three weeks.** The fastest selling article in the U. S. My agents are making as high as $22.50 in a single day. As a Potato Bug Exterminator I *challenge the world* for its equal in the saving of *time, labor,* or material. A light tap on handle discharges 3,000 to 5,000 fine drops on each hill as fast as you can walk. ½ to ¾ lb. of London Purple or Paris Green will give an acre three separate dressings. For syringing fruit trees infested with Canker Worms or insects of any kind, it has **no equal.** Agents make $8 to $15 per day anywhere. Read displayed advertisement in April No. of *Agriculturist* of Lewis's Combination Force Pump, on page 164. Price List, Testimonials, and Terms to Agents free on application to

P. C. LEWIS, Catskill, N. Y.

POTATO BUG. COTTON WORM. CANKER WORM.
THE BEST INSECTICIDE EVER USED.
London Purple.
(Trade Mark.)

Sold by all Wholesale Druggists and Stores throughout the United States. If not obtainable of nearest dealer, send direct to sole manufacturers, **HEMINGWAY'S LONDON PURPLE COMPANY (Limited),**
60 Mark Lane, London, England. 90 Water Street, N. Y. P. O. address, Box 990.

A. R. WHITNEY, Franklin Grove Orchard and Nurseries, Lee Co., Ill., writes: "We have bid the Canker Worm a long farewell, and have done it with your LONDON PURPLE. We put in about three-fourths to one pound of LONDON PURPLE to 44 gallons of water, and applied with a force pump. It is better than Paris Green, as the particles of LONDON PURPLE adhere to the leaves and Paris Green does not."



Hardy Perennial Plants

Are increasing in popularity, because they are

Hardy, their roots living through the winter—and **Perennial,** appearing year after year in the same place.

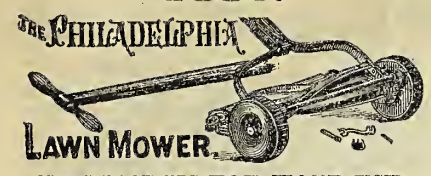
They include the most beautiful kinds that bloom all through the season, from earliest spring to latest fall.

Send for free descriptive Catalogue of the largest collection in the Country—including Hardy Climbers, Flowering Shrubs, Lilies, Phloxes, Ferns, etc. Also choice native plants.

WOOLSON & CO., Box 180, Passaic, N. J.

AHEAD OF ALL COMPETITION!

1880.



EIGHT SIZES FOR HAND USE.
Weighing from 22 to 51 lbs.
THREE SIZES FOR HORSE POWER.

The very large increase in our sales last year, prove that these Machines fully sustain the awards "**AS THE BEST**" made to them at the great Centennial "**hundred day trial,**" in Philadelphia, in 1876, and their complete victory at the Paris Exposition in 1878. We offer for 1880, Machines from entirely new patterns and greatly improved in every respect.

Examine our New Lawn Sweepers. Hand or Horse size.

GRAHAM, EMLEN & PASSMORE,
Patentees and Mannfacturers,
631 Market St., Philadelphia, Pa.
Send for Descriptive Catalogue with prices.

EXCELSIOR
LAWN MOWER

CROQUET MOWER $12
THREE PATTERNS OF HAND MOWERS 10 TO 20 INCH CUT.
HORSE MOWERS 25 TO 40 INCH CUT.
OUR SIDE WHEEL MOWER LIGHTEST AND SIMPLEST MOST DURABLE
ALL OUR MOWERS GUARANTEED.

CHADBORN & COLDWELL MFG. CO., Newburgh, N.Y.
☞Send for Illustrated Circular and Price List.

CITY AND COUNTRY TRADE
SUPPLIED WITH THE
Celebrated Excelsior Lawn Mower.
H. B. GRIFFING,
70 Cortlandt Street, N. Y. City.

1880.
Pennsylvania Lawn Mower,

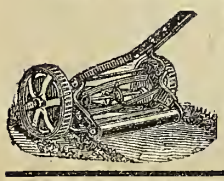
Snrpassing all others and pronounced **the best,** lightest, rnns more easily, cuts longer grass, is more durable, requires less repair, onts grass more smoothly, is less liable to obstrnction, is of handsome appearance.

Penn. State Agricultural Society says, "It will, we believe, wear longer, do the work better with less labor than any other Mower. One of the peculiarities is that it will cnt higher grass than any other Mower."

Every machine warranted. Address
LLOYD, SUPPLEE & WALTON, Philadelphia.

LAWN MOWERS.
The VELOCITY, The TRIUMPH, The EXCELSIOR.
All at lowest prices. Send for circnlars.
A. B. COHU, 197 Water St., N. Y.

JUNIOR AND SENIOR
"BUCKEYE"
LAWN MOWER.



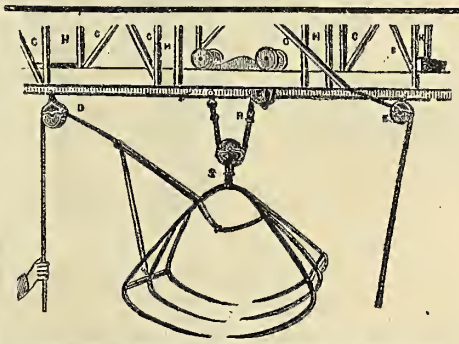
The Lighest and Easiest RUNNING MOWER ever made.
Strictly First-Class.
MAST, FOOS & CO.,
Springfield, Ohio.
Send for Catalogue.

PENNOCK'S PATENT ROAD MACHINE
Keeps the highways *five times better* for *half* the *present cost.* Is rapidly coming into favor in city and country. Circulars free.
SAM'L PENNOCK & SONS, Kennett Sqnare, Pa.

AGENTS Wanted.
CHURCH'S HAY ELEVATOR & CARRIER

Best in use for mowing away hay in barns or stacking, being adapted for either purpose. Has no eqnal for **simplicity, durability,** and **good work.** The track is **self-adjusting** and is easily put up. Will be sent to responsible parties on trial. **Send for special terms for introduction.** Price within reach of all. Send for descriptive Circulars and Price List to **E. L. CHURCH & CO.,** Mannfacturers, Harvard, McHenry Co., Ill.

DOUBLE HARPOON
HORSE HAY-FORK.
BEST IN THE WORLD.
Descriptive Catalogne sent free.
Pennock Manufacturing Company,
KENNETT SQUARE, Chester Co., Pa.

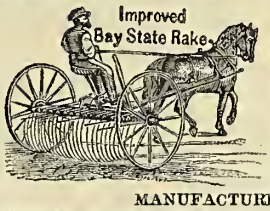


Grappling Hay Fork and Railway Hay Conveyor. Best combination known. Used by thousands. Circnlars sent, Agents wanted. **G. B. WEEKS,** SYRACUSE, N.Y.

Gardner's Railway Pitching Apparatus.

Consisting of Carrier, Grappling Fork, Pulleys, and Hooks. For unloading Hay, Grain, Beans, Corn Stalks, loose or in bundles, etc. Can be nsed in any barn. Also, Improved Stacking Apparatns. Send for Circnlar, and get valuable information.
E.V.R.Gardner&Co.,
Johnson's, Orange Co., N.Y.

IMPROVED BAY STATE RAKE.



This Rake Received the Highest Award at the Centennial Exposition and Field Trial. The only Silver Medal awarded at the Paris Universal Exposition, in 1878.

This rake has taken more first premiums than any other rake.

It is Easily Handled by a Girl or Boy, strong enough to drive a horse.

MANUFACTURED BY
THE BELCHER & TAYLOR AGRICULTURAL TOOL CO.,
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SPRING STEEL TOOTH
HORSE RAKES.
Highest Award at the **Medal of Honor**
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CHAMPIONS OF THE WORLD.

No Cogs or Ratchets, Easiest Hand or Horse Dumping. Purchasers prefer them to all others for Durability and Efficiency. Fully guaranteed; so no risk is incurred in ordering from ns. Responsible Agents wanted where we have none.

Send Stamp for Catalogues of RAKES, THRESHING MACHINES, &c.
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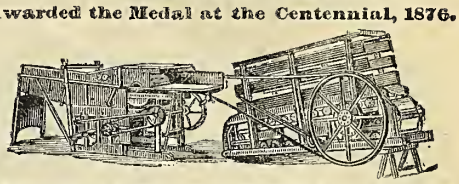
ALBANY, N. Y.

WARRANTED THE "BEST"

Send for descriptive circnlar. Address
JACOBS BROTHERS, Columbus, Ohio.

HEEBNER'S IMPROVED
Level Tread Railway Horse Power with Patent Speed Regulator.
Awarded the Medal at the Centennial, 1876.



Horses stand in the power with their feet in a natnral position, relieving them of all strains and much of the fatigue occasioned by working on tread powers of the old style. Smooth shod horses or oxen work on them, walking at the rate of only 1½ miles per hour. These Powers require less elevation, give more power, save the horses, and save money. Made with double or single gear, for one and two horses, and have the only snccessful Speed Regulator in the world.

LITTLE GIANT THRESHER & CLEANER.

The simplest, most durable, best and easiest working, and cheapest machine for threshing and cleaning all kinds of grain, also flax, millet, clover, and timothy seeds now in nse. It contains more good points than any other in nse.

These Powers and Threshers are pronounced by all who nse them to be, beyond a single doubt, the best in use. We own all the patents, and are the Sole Manufacturers, and have the machines in use all over the world. Send for illustrated catalogue. **HEEBNER & SONS,**
Lansdale, Montgomery Co., Pa.

BEST RESULT EVER OBTAINED.
THE NEW MASSILLON THRESHER.

Record, 1 Bnshel waste in 2,640. This when threshing at the rate of 132 Bushels per hour in a 15-minute run. Send for particulars. Address RUSSELL & CO., Massillon, O.

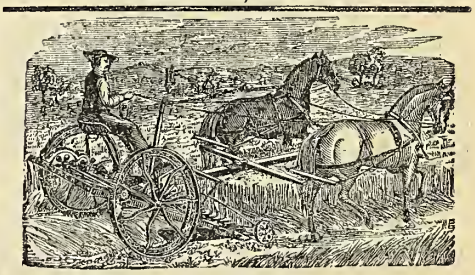
Something New.
The Farmers Friend
Corn Planter.

There is not an advantage possessed by any Planter that is not applied on this machine.

ANOTHER ANNOUNCEMENT.
THE MONARCH
Grain and Fertilizer Drill.

The latest and best "Adjustable Feed" in the market.

Also, THE OLD RELIABLE
FARMERS FRIEND DRILLS,
with the **CONE GEAR** and **Double Force Feed.**
Fnll information free by addressing
FARMERS FRIEND M'F'G CO.,
DAYTON, OHIO.



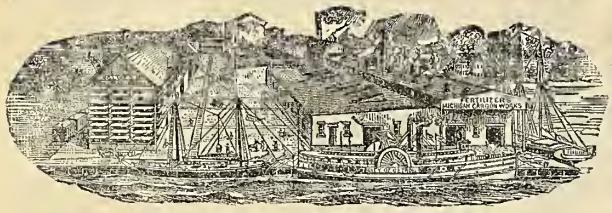
WILBER'S DIRECT DRAFT
EUREKA MOWER
Is the LARGEST, CHEAPEST, and
Lightest Draft Mower in the World.
☞ It lessens the expense of gathering the Hay Crop fully twenty-five per cent. Address
EUREKA MOWER COMPANY,
Towanda, Bradford Co., Pa.

FARMERS AND DEALERS, READ THIS!

These cuts represent our 20 Steel-Tooth Horse-Rake, with Iron Hubs (or Locust Hubs boiled in oil)—9000 in use—and our Positive Force-Feed Grain, Seed, and Fertilizing Drill (which can be changed to sow any quantity while Drill is in motion), with Pin or Spring Hoes—8277 in use and giving satisfaction. All manufacturers say theirs are the best. All we ask is, send for *Descriptive Circular and Price-List,* which contains letters from persons using them. All are *warranted.*
Hagerstown Agricultural Implement Mfg. Co.
State where you saw Advertisement. **Hagerstown, Md.**

THE HOMESTEAD,

A HIGH-GRADE SUPERPHOSPHATE.



Our works are among the most complete and extensive in the country, and have every appliance to enable us to furnish Standard Fertilizers at the Lowest Price. Our machinery is of modern and improved construction, and our goods are made under the guidance of an able chemist, who inspects every lot before being placed on the market. With the large amount of capital invested in the HOMESTEAD, we are much more interested in having its high character maintained than any individual purchaser could possibly be; and this fact alone should assure the farmer that every pound he buys is all that is represented.

As manufacturers of Animal Charcoal, we have at our hands the most valuable material used in making fertilizers—viz., Bone Black Dust. This fertilizing substance contains eighty per cent. of phosphate of lime, against fifty-five per cent. contained in raw bones; and its well known value commands so high a price in the European markets that but very few manufacturers of fertilizers in this country use it. Although the HOMESTEAD Fertilizer costs us more to manufacture than if prepared of the materials generally used, we shall continue its present high standard, and place on the market a genuine, pure Bone Black Phosphate.

ALMONT, MICH., June 18th, 1879.

MICHIGAN CARBON WORKS, DETROIT, MICH.:

Gentlemen:—Please notice the enclosed photograph of wheat cut from the same length of drill, seven inches apart—superphosphate and no superphosphate. Draw your own conclusions which is which. Of course, this is showing more difference than the field will average; but this shows what superphosphate will do on very poor soil. This was cut from a very poor spot, but each having the same chance, with the one exception. It was cut 13th of June. Shows the earliness of that fertilized. I have the best piece of barley in this section—100 lbs. superphosphate per acre sown on wheat stubble. The best farmers here are taking note of these things.

Very truly,

F. J. GROAT.

MEDINA, ORLEANS CO., N. Y., August 7th, 1879.

MICHIGAN CARBON WORKS:

Gentlemen:—Enclosed please find a photograph of some barley. This barley was grown on A. H. Poler's farm, four miles south of Medina, Orleans Co., N. Y.

I made a frame four feet square and set it in the standing grain on the day of its being cut. I then cut and gathered all that stood within the frame of each, where there was phosphate and where there was no phosphate. I let it lay in the sun one day to cure, then weighed each bundle as you see it on the photograph.

The phosphate was put down with the seed with a fertilizing drill, the teeth being six inches apart. These bundles were cut side by side, only six inches apart. The one on the left of the photograph had no phosphate, and weighed twelve ounces. The one on the right had one hundred and forty pounds of the Homestead Superphosphate to the acre, and weighed two pounds and fourteen ounces to the four feet square. *This is correct.*

A. H. Poler also experimented on corn, potatoes, and winter wheat, with as good results on each as on his barley. Of course he has not harvested his corn; but it stands sixteen inches higher than the rest of the corn and earing one-half better.

Yours, respectfully,

GEO. W. POLER.

ACTUAL RESULT AT OUR SEED-FARM ON LETTUCE SEED.

Homestead produced	583 lbs. per acre.	116 lbs. of lettuce seed, at $1.25	$145 00
Where none was used	467 " "	560 lbs. of Homestead, at $40 per ton	11 20
Difference favor of Homestead	116 " "	Actual profit per acre	$133 80

D. M. FERRY & CO.

Send for Circulars, giving full reports of results and all particulars in regard to use.

☞In places where we have no authorized agent a barrel of 200 pounds will be sent on receipt of $4.

ODORLESS FLORALIS.

Prepared expressly for Lawns, Flower Gardens, Pot and House Plants.

DIRECTIONS.—Use three tablespoonfuls of the manure to a gallon of water. Steep twelve hours before using, and keep well stirred while being applied. Do not apply oftener than once in two weeks.

PRICES, { Box containing 10 lbs. $1 00
" " 25 lbs. 2 00
" " 50 lbs. 4 00

Sent anywhere in the United States or Canada, by express or freight, on receipt of cash orders.

MICHIGAN CARBON WORKS, Detroit, Mich.

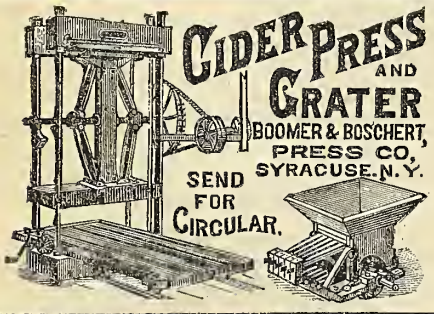
GOOD AGENTS WANTED IN EVERY TOWN.

Stockbridge Manures. ANIMAL MEAL.

Bowker's Phosphates. LAWN DRESSING.

NEW PAMPHLETS AND CIRCULARS JUST OUT—MAILED FREE. Address

BOWKER FERTILIZER CO., 43 Chatham St., Boston, Mass. 3 Park Place, New York. 81 Exchange St., Rochester, N. Y.

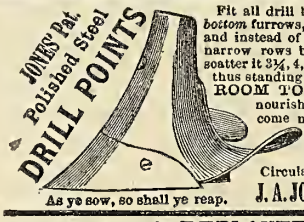


WM. D. ANDREWS & BRO.,

TUBE WELLS.

235 BROADWAY,

Opposite Post-Office, NEW YORK.



As ye sow, so shall ye reap.

Fit all drill boots, run level, cut *flat bottom* furrows, cover with *mellow* soil, and instead of *crowding the seed* into narrow rows but *one inch in width*, scatter it 3¼, 4, and 5 inches; the plants thus standing *wider* apart, have more ROOM TO STOOL, derive more nourishment from the soil, become more vigorous, and produce better developed average heads.

Send for Illustrated Circular with Testimonials to

J. A. JONES, Wilmington, Del.

A REPLANTER

Is offered for planting Corn and other large seed, combining simplicity, utility, and accuracy. *It will plant in all soils.* Boys can do good work with it, and are delighted to get to use one. Price only $3, delivered at your nearest station or express office. Agents wanted.

THOS. B. McCONAUGHEY, *Newark, Delaware.*

WELL BORING,

ARTESIAN WELL DRILLING & MINERAL PROSPECTING MACHINERY.

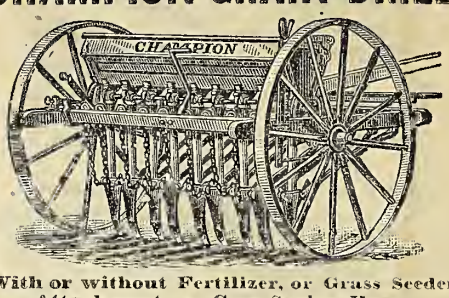
and how to use, is fully illustrated, explained and highly recommended by the "American Agriculturist" in the November Number 1879. Page 465. Send for it. Portable, low priced, worked by man, horse or steam power. Needed by farmers in every county. Good business for Winter or Summer and very profitable. Can get good wells in earth or rock anywhere. We want the names of men that need wells. Send for illustrated price-list and terms to Agents. Address,

Pierce Well Excavator Co., 29 Rose Street, New York, U. S. A.

Champion of the World!

THE

CHAMPION GRAIN DRILL



With or without Fertilizer, or Grass Seeder Attachments, or Gum Spring Hoes.

It has a **perfect force feed** Grain Distributer that will sow accurately all kinds of grain without the least injury to the seed. The most perfect **Force Feed Grass Seed Distributers** in the market. Fertilizer attachment **can be relied upon** to sow all kinds of commercial manures whether dry or damp in any desired quantity. **Draft Light, Construction Simple, but durable.** Liberal discount to cash customers. Send for descriptive circular.

JOHNSON, GERE & TRUMAN, Owego, Tioga Co., N. Y.

METROPOLITAN AGRICULTURAL WORKS.

Farm Implements and Fertilizers.

No. 1 Peruvian Guano; Standard. No. 1 Peruvian, Lobos brand.—**Russel Coe's Superphosphate of Lime.**

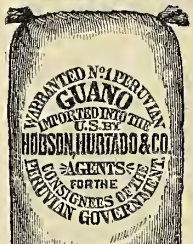
Complete Manures, Metropolitan Fertilizer, Pure Ground Bone.

Sold at lowest trade price, by the ton or cargo. Send for 1880 Pamphlet.

H. B. GRIFFING, No. 70 Cortlandt Street, New York City.

THE BEST ALWAYS PAYS.

In order to be able to meet the increasing demand for **PURE PREMIUM BONE,** we have removed our entire establishment from Salem to Alliance, O., where we shall be pleased to see and hear from all who want the best fertilizer that the market affords. Address all communications for the purchase of Premium Bone or sale of raw stock to LEWIS SCHILLING, *Pres't,* Excelsior Fertilizing Co., Alliance, O.



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DEALERS IN

PERUVIAN Guano

EXCLUSIVELY,

170 Front Street, New York.

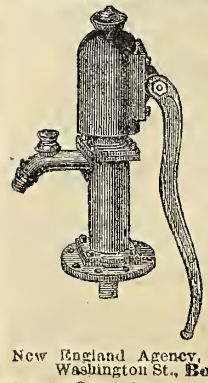
W. S. BLUNT'S

Universal Force Pumps.

Secured by letters patent.

THESE PUMPS HAVE RECEIVED THE "MEDAL OF SUPERIORITY," The highest award of the American Institute for 1878 over all competitors.

These pumps have enormous power, and are for the house or for **out door wells** of any depth. They are constructed with special regard to strength, ease of working, and durability. They can be immediately changed from lift to force pumps, and the air chamber can be revolved, so as to allow the handle to work at any desired angle with the spout. Having close tops, they cannot be tampered with. Attention is called to our new elegant pattern **DEEP WELL non-freezing FIRE PUMP. Also, Blunt's Sand Vacuum Chambers.**—A complete protection against sand or gritty water in **dug or driven wells, pits, mines, and rivers. For hand or steam pumps,** all sizes, from 1¼-inch to 4-inch suction pipe.



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New England Agency, **A. M. MORTON & CO.,** 25 Washington St., **Boston, Mass.**

Pacific Coast Agency, **Dunham, Carrigan & Co., San Francisco, Cal.**

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Underwear in Muslin and Merino, etc.

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BY MAIL OR EXPRESS.

OUR MAIL ORDER DEPARTMENT is now so systematized, and in charge of such thoroughly competent and experieneed hands, that persons unable to visit our store can do their shopping by writing us for samples or goods, with the assurance of getting them at the **same prices** as if buying in **person.** We carry an *average* stock of about **half a million of dollars,** *all bought for prompt cash* in the markets of Europe as well as in this country. Try us, and see how **cheaply** and **quickly** you can get what you want by mail or express. When in town we shall be pleased to have you call on us.

SEND FOR CATALOGUE OR SAMPLES.

COOPER & CONARD,
IMPORTERS AND RETAILERS,
Ninth and Market Streets,
PHILADELPHIA.
Established 1852. Mention this paper.

CAUTION!—The great popularity of, and increasing demand for our "Automatic" Sewing Machine induces unprincipled agents to deceive customers by claiming, for their old pattern machines, automatic and other features belonging exclusively to us.

THE

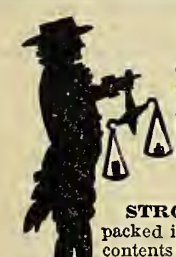
"New Automatic"

or "NO TENSION" Silent Sewing Machine

Differs in all essential respects from every other Machine! Only Machine without a Tension, and Bobbin or Shuttle!—Only really Light-Running Machine!—Only Machine with Stitch-Regulator!—Easiest to Work!—Fastest!—Makes Strongest Seam!—Absolutely without Danger to Health!

As it is impossible to convey by advertisement an idea of the unique and wonderful features of this Machine, we solicit **DIRECT CORRESPONDENCE** from all persons owning or about to purchase a Sewing Machine, and will carefully and promptly reply to all communications.

Address, **WILLCOX & GIBBS S. M. CO., 658 Broadway, New York.**



The Ready Family Soap Maker: **LEWIS'**

PERFUMED LYE

98 Per Cent. Pure!

STRONGEST AND BEST LYE MADE. *This LYE is a FINE POWDER,* and packed in cans with an ordinary slip-lid like our Baking Powder, so that any portion of contents of can may be used without spoiling balance. **12 pounds of Perfumed Hard Soap** made in *twenty minutes without boiling,*—and your wash will be sweet and clean to the senses, without that nasty smell produced when using ready-made Soap or Soap made from other Lye. **One teaspoonful will soften five gallons of hard water. LEWIS' LYE is 28 per cent. stronger** than any other Lye or so-called Rock or Ball Potashes.

MANUFACTURED ONLY BY

GEORGE T. LEWIS & MENZIES CO., Philadelphia, Pa.

FARMERS AND OTHERS

having spring or running water can have the water conveyed to their premises by using a Hydranlic Ram. More than 800 different styles. **Lift and Force Pumps, Hydraulic Rams, Etc.**
Send for circular and prices.
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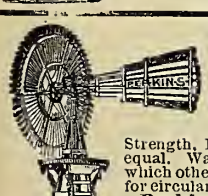

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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from Page 220.

In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations are seldom repeated, as those who desire information on a particular subject can cheaply obtain one or more of the back numbers containing what is wanted.

Back numbers of the "American Agriculturist," containing articles referred to in the "Basket" or elsewhere, can always be supplied and sent post-paid for 15 cts. each, or $1.50 per volume.

The German Edition.—All the principal articles and engravings that appear in the *American Agriculturist* are reproduced in the German Edition. Besides these, there is a special department, edited by an eminent German cultivator. Our friends can do us a good service by calling the attention of their German neighbors and friends to the fact that they can have the paper in their own language, and those who employ Germans will find this Journal a most useful and acceptable present.

Bound Copies of volume 38, and of every previous volume back to Vol. XVI. (1857), neatly bound, with gilt backs, Index, etc., are supplied at $2 each (or $2.30 if to be sent by mail). See Publishers' Notes, 2d cover page.

Clubs can at any time be increased by remitting for each addition, the price paid by the original members; or a small club may be made a larger one at reduced rates, thus: One having sent 6 subscribers and $7, may afterwards send 4 names more and $3, making 10 subscribers for $10.00; and so for the various other club rates.

Terms to New South Wales, New Zealand, Australia, Africa, etc.—To several inquirers. Under the latest revision of the Postal Union Regulations the price of the *American Agriculturist* (either English or German edition), including postage *prepaid* through, will be covered by 7 shillings sterling per annum. This applies to the above countries, and to all others embraced in the General Postal Union. The simplest mode of remittance is by Postal Money Orders, payable in London, to the order of Orange Judd Company. These can be readily cashed in N. Y. City at a slight discount, which the publishers will cheerfully pay. For Club rates, (postage included), see our second cover page, and reckon 22 cents to the shilling sterling.

Home Made Root Cutter.—"L. B." In the March number for last year we gave a description, with illustrations, of a cheap and easily constructed cutter for preparing roots for farm animals.

Osage Orange a Rapid Grower.—A specimen of Osage Orange planted by Dr. Darlington at West Chester, has been recently cut down. At one foot from the ground, the body of the tree, about 50 years old, was 10 feet 3 inches in circumference.

Liquid Manure.—The amount of fertilizing material in the urine of animals equals that contained in the solid excrement, but is in a form that may be very readily lost. The *Urea* is the ingredient of chief value—a quite complex nitrogenous substance which is easily decomposed into Carbonate of Ammonia, and then escapes into the atmosphere. Whenever there is a pungent odor of ammonia from a manure heap, or tank in which liquid manure is stored, there is a loss of valuable manure taking place, and it should be arrested by using some absorbent as plaster, muck, or litter of any kind.

Asparagus in Wet Soil.—"S. T.," Marion, Ind., writes to Peter Henderson, asking a question on Asparagus culture. Thinking that the reply may be of use to many others, Mr. H. sends it for the Basket. "His land is 'rich alluvial deposit, which at certain seasons of the year is covered by water for three days at a time,' and he wishes to know if such land 'would be suitable to grow Asparagus or other crops.' We think not, the land being covered with water for three days becomes so completely saturated that the roots are actually in water for twice or thrice that time, and no plant other than an aquatic could so long endure inundation without injury. These bottom lands on the margins of streams, are usually most fertile, and if by diking or banking, the water can be kept off, no land is better fitted for garden crops."

"I Do Earnestly Desire Information," is the ending of a letter which we *could* have answered on a postal card, and it would have reached the writer in time to be of use. But the writer, though he so strongly expresses his "desire for information," takes very good care that we shall not give it to him, for he signs himself "Young Gardener." He has cut us off from reaching him by mail, and as for the paper, we have a rule not to answer anonymous letters. If those who write us do not sign their names, the letter goes into the waste-basket, unless, as in the present case, we make use of it as a text to remind new subscribers of this rule. A number who have lately asked a variety of questions, and have not given their names, should, if the answers are of importance to them, repeat the questions over their own signatures. It so happens that one at least of "Young Gardener's" queries is answered in this paper, the same having been asked by one who gave his name. It should be understood that we do not publish a name when we know that the writer prefers that we should not do so; this he could have indicated by placing his real name after or below the signature "Young Gardener."

Another Veteran Peach Tree.—C. Thompson Adams, Norfolk Co., Mass., sends an account of a Peach-tree that he had just cut down. "The tree was on the land when my father bought it in 1840. It came up from a hole made by lightning, at the foot of a large Oak that was struck and killed, the seed having probably been planted by a squirrel. For the past 10 years it has borne more or less fruit, though previous to that time it bore but little." Forty years and over is old for a peach tree.

Hay Caps are usually made of common unbleached cotton, and it is best to buy that which is fully a yard wide, as it, when cut into squares, makes the most economical caps of the most handy shape and size. The raw edges should be hemmed, which can be done very rapidly on a machine; at the same time the corners should be turned up two or three inches, thus making a fold in which a cord may be inserted. This cord should form a loop, by means of which the cap can be pinned down with short wooden pins provided for the purpose. These caps are of great value, as a large quantity of hay may be secured against a sudden storm at just that time when a rain is so damaging to the curing hay.

Liquid Manure.—To answer several inquiries at once, we may say that either horse, cow, sheep, or hen-manure may be used, and no definite rule can be given beyond the caution to not use it too strong. Where there is a provision for saving the drainage from stables, this may be used upon the garden if sufficiently diluted. A cask or barrel may be prepared by putting some straw in the bottom and half or two-thirds filling the barrel with horse, cow, or sheep-manure. This is to serve as a leach, pouring water in at the top and draining off the manure "lye" at the bottom. The old direction to dilute this to "the color of boarding-house tea," is perhaps as definite as any. Where guano is used, one pound to five gallons of water is abundantly strong, and with the best Peruvian Guano, twice the quantity of water to a pound would be safer. In the use of liquid manure, some precautions are to be observed. It is not to be applied to the foliage, but to the root of the plants. In dry weather, draw away the surface soil, apply the manure, and when this has soaked in return the soil. This is to prevent the baking of the wet soil and forming a crust. A better way to accomplish this is to place a mulch of straw, litter, or chips, on the surface around the plants. The manure may be applied through this mulch. In a dry time, do not use the liquid manure unless the plants can be kept watered as needed until rain falls again.

Swedish or Alsike Clover.—Several have written us from different parts of Pennsylvania, stating that a person was selling seeds of the Swedish Clover, and asking our opinion about it. None of these reported any thing beyond the bare fact, and as our "opinion" of the matter would depend altogether upon what was represented in regard to the clover, it was difficult to reply. There is no special reason why one should go about selling this seed any more than he should that of Hungarian Grass, Buckwheat, or any other seed kept by all the regular dealers, and we were curious to know what the vender claimed for this clover. At last Mr. S. Stouffer, of Huntingdon Co., has sent us a circular, and a remarkable document it is. We are told that the clover "takes its name from the Alsacian districts of Stockholm,"—which is about like saying that Buckwheat gets its name from Bucks Co. in Rhode Island. We are told that the clover is "extensively cultivated by the leading agriculturists of Great Britain," which is not true. We read in the circular of "Its Great Hardiness, for no winter can kill it, capable of resisting the extremes of drouth and frost, and the certainty of the plant when other varieties fail." The latest authority on this point that occurs to us is Mr. Root, who is, as was Mr. Quinby before him, much interested in this clover as a honey-producing plant, and would gladly have it succeed. In his recent "Bee-Keeping," he says: "But experiments indicate that in dry sandy soils it is not permanent, and will not survive the second winter." Our correspondent sends us a sample of the seed to know "if it is genuine;" we can only say that it looks like the seed of Alsike Clover, but when Mr. Vosburg says "Sold only by" himself, he tells that which an inquiry at any seed store will prove to be as much a work of his vivid imagination as some of the other remarkable statements in his very remarkable circular. We are told that the peddler sold his seed at the rate of $45 per bushel. As this is just two and a half times the *retail* price of the regular dealers, it is not difficult to see why he should peddle. We have frequently cautioned our readers that new and valuable seeds and plants were not hawked about the country by peddlers; such things are first to be had of the regular dealers. This clover is not at all new, nor is it, in this country, especially valuable.

"Making Roads."—The repair of roads is much more costly than it should be because the system—if it can be called a system—of their construction is extremely faulty. An earth road, rounded up in the center, can seldom be more than passable for at least a third of the year. The repairing of such a road usually consists in adding more earth, and this is usually done in the worst season of the year. It is not to be expected that American roads, constructed so rapidly, can be made like the hard, smooth, and lasting road beds of older countries, but the work that is done on them, from year to year, should be of such a kind as to make an approach to a perfect road. Broken stone is the best material for road-making, and as this is a common material, it should be much more generally employed. Just how this stone is to be used and where, are matters which each town or road district must decide. Whatever is done, let it be done well, and make a finish of the work as far as it goes. The most used and worst part of the thoroughfare should have the first attention. A little good road made each year will in time see the whole in a satisfactory shape.

Grinding Tools.—The value of an edge-tool depends very largely upon the cutting edge, or, in other words, upon the kind and frequency of the grinding. An instrument that is "as dull as a hoe," ought not to be very dull. The ease with which weeds may be cut with a hoe kept sharp by occasional grinding, compared with the trouble given by a hoe that is never sharpened, ought to lead to the practice of keeping them sharp. We know that turning the grindstone is back-aching work, but when a few minutes of it makes the reaper or mower go much easier for several hours, the grinding should not be neglected. It is a saving of labor to keep the tools sharp; it pays in every possible way.

The Buckwheat Crop is the last crop of the season, and in the latitude of New York, is sown the last of this month or early in July. It is frequently a "filling crop"—that is, sown in some place where some early crop has failed. It is often used to kill weeds, as it is a rank grower, and completely shades the ground, thus acting as a "cleansing crop." As a means of bringing up the fertility of poor or partly exhausted soil, buckwheat is specially good, as it is a close and pretty deep feeder, and will produce a large crop of green material that may be plowed under, thus increasing the organic matter and thereby enriching the soil. The quantity of seed to be sown is from two to three pecks per acre.

Michigan Timber.—The "Peninsula State" leads all others in the production of timber, but at its present rate, its valuable wood-land must be diminishing very rapidly. The "crop" for 1879 is reported as follows:

Saginaw District	736,106,000 feet.
Huron Shore District	410,646,000 "
Interior Mills	518,670,000 "
Lake Michigan Mills	1,338,127,000 "
Total	3,003,549,000 "

Australian Competition.—The shipment of meat from Australia to England has been successful, and that great island-continent, with its 7,000,000 head of cattle, enters the contest for supremacy in the British Meat Market. In this matter, we, as a nation, are deeply interested, because any competiton like this, leads to questions that are vital to the meat producers of our great grazing interior. Can the growing of cattle be cheapened? This is a question which is the natural outgrowth of rivalry; and this will lead to an improvement in the kind of animals; the production of more and better meat. All this is natural, and leads to good results. The matter of transportation will not be behind other interests, and a reduction of the present high rates will follow. Not the least among the benefits, will be a serious handling of the question of the necessities of the middlemen, with a reduction of the number of hands through which stock now must pass, each one taking a portion that ought to go by good rights to the producer, or at least, be divided between him, and those who consume the meat. There are a number of important problems involved in our present production of meat, that a healthy rivalry will lead us to solve, to the best good of all concerned. With our large, vast grazing country, and a proper adjustment of transportation rates, a better class of animals, etc., we may hope to compete with Australia or any other country, in supplying meat to England.

Dipping Sheep.—The effect of a Dip is to free the sheep from all external parasites, as ticks, scab, etc., and skin diseases, the causes of some of which are not fully understood. A Dip of 12 lbs. of Tobacco and 6 lbs. of Flowers of Sulphur, to 50 gallons of water, is one that has been so generally used, that it can be recommended. Some add to this a little Concentrated Lye, a pound or so, and about the same quantity of Arsenic. If arsenic is used, proper caution should be exercised, and the poisonous nature of the mixture kept in mind. The sheep are to be dipped while the mixture is warm. Those who have had experience claim that the dip of tobacco and sulphur will do all that can be accomplished by the use of arsenic. It may not be generally understood that sulphur does not dissolve in the Dip; hence, in order that each sheep may get its share, the mixture while in use, should be frequently stirred up from the bottom, and the sulphur be thoroughly diffused through the liquid.

Coal-Oil Barrels.—In answer to an inquiry as to the best method of preparing kerosene and other such barrels, so that they may be used for cider, etc. "C. K. C.," Beliot, Wis., writes: "Take one head out of the kerosene barrel, start a fire in the bottom, and put a bushel of dry straw, or long shavings, in to keep it burning long enough to draw the kerosene out of the wood; let it burn a few minutes, and just before the wood commences to burn, turn the open end to the ground, and the flame will be smothered. Use the barrels for water a couple of weeks, put the head in again, and they are ready for cider, or anything else one chooses to put into them. The barrels will be worth double the price of common ones." C. K. C. omits to state that the other head that is removed should also have the same treatment and be burned, etc....Another correspondent, "R. P.T.," Cedar Rapids, Iowa, recommends to first burn thoroughly, then scrape, and scald them with hot water, then fill them up with clay, letting them stand with the clay in them for 4 or 5 days." R. P. T. omits to say what kind of clay, whether dry or moist. As it is to act as an absorbent, we suppose it should be dry. Would not dry earth answer as well as clay?....W. Scott, Kankekee Co., Ill., says that he has cleaned fish barrels and made them sweet enough for packing butter by half filling the barrel with lye and rolling it occasionally; when the lye has taken up all the grease, it is emptied out and the barrel filled with water and allowed to stand for several days. We doubt if this method would be of much utility with coal-oil barrels...."C. A. E.," Bridgeport, Mich., says if the barrel is so placed that the steam from the exhaust pipe of a steam engine will pass through it, that no smell of oil will be perceived after a few weeks. He also says that they will become sweet if used for a few months as rain-water barrels.

Pipes for Conveying Water.—"I wish to bring water from a spring to my house (or barn), what kind of a pipe shall I use?"—is in brief the substance of several letters that have come of late; though some express fears of lead pipe, others ask if iron pipe can be used with safety, and so on. Probably in regard to cost, ease of laying, etc., lead pipe is cheapest, so far as outlay goes, but it may be dear in the end, as in some cases its use has caused serious illness. For all soft water, lead pipe should be avoided, but for hard water it may be, even for domestic purposes, used without danger. Hard water soon forms a coating over the interior of the pipe, and the water no longer acts upon it. Where water is flowing continuously through the pipe, or where the precaution is taken to first draw off all the water that has stood for some hours in the pipe—a precaution so easy that it should always be taken—there is little or no danger in the use of lead for any but the softest water. Iron pipe is quite safe; it soon becomes coated with the oxide of iron, and if some of this be taken into the system no harm can follow. "Galvanized iron," so called, is iron coated with a film of zinc, to protect it from the action of the water. This it does effectively, but the zinc itself is acted upon by the water, and is more or less dissolved by it, hence galvanized iron pipes should not be used for water. Tin-lined lead pipe would be excellent were it not for the fact that tin is very brittle, and is liable to crack; when this takes place the lead is dissolved more rapidly than were it not so coated, and as there is always danger from this source, such pipes are not advisable. Of course there can be no objection to glazed earthenware pipes, but they can not be used where there is much pressure, and the cases in which they are available are comparatively few. On the whole, for soft water, iron is the best material, while for waters too "hard" for washing, lead may be used with entire safety if the precaution above mentioned be observed.

The Prize Essays on Keeping One Cow.—The prizes offered in the February number of the *American Agriculturist* brought to the Editors more than seventy (73) essays. Over half of them thoughtfully and well written. They were submitted to two gentlemen in entire ignorance of who their authors were, and they awarded the prizes as follows: 1st prize, $50, to "Buttercup," Mrs. G. Bourinot, House of Commons P. O., Ottawa, Canada; 2d prize, to "Doctor," W. S. Battles, Girard, Pa.; 3d prize, to "Mobile," Geo. G. Duffee, Mobile, Ala.

Insects and Force Pumps.—A few years ago we knew not the Potato Bug, and the makers of pumps and hand-water engines of all kinds could make their squirts to clean carriages, wash windows, put out fires, and do various other feats in hydranlics without regard to bug killing. Now a pump that does not provide for the potato is not complete. Such was our thought as we unpacked the parts of "Lewis' Combination Force Pump." It must not be thought from this that the pump is complicated—as it requires but a simple change to convert a regular force pump, with its short hose, into a garden syringe. Another slight change—and there you are—a Paris-greener or London-purpler—the potato bugs are provided for, and the combination is complete. The thing is a perfect arsenal of water guns, each serviceable in its way, and made for use rather than show.

"The Complete Home."—If an inexperienced house-keeper wishes to know how to cook a particular dish, there is a whole library of works ready to help her. But cooking is not the only department in the management of which a young house-keeper, and for that matter, one who is not young, needs advice, and it is very seldom that it can be had save of some other house-keeper of wider experience. But every mother of a family has not a friend at hand to whom she can go in her doubts and perplexities concerning the various matters of home management; and the work entitled "The Complete Home" is intended to be an adviser in not only what relates to the material comfort of the home, but with regard to what we may term the morals of the household. In all that relates to—what old fashioned people call "the bringing up of children"—its teachings appear to be eminently sound and useful, and it is a work that may prove a comfort and a help to many a mother.

Milk in New Jersey.—New Jersey has excellent laws regarding the sale of milk; that State has a way of executing her laws (and sometimes the people who don't observe them) and the State Board of Health are taking measures to put them in force. Dr. Wm. K. Newton, Paterson, has been appointed State Inspector of Milk and circulars are sent out informing people of the requirements of the laws. The case is well covered by this statement—"Milk may be defined as pure when it comes from a healthy cow and when nothing is taken from or added to it." Those who deal in any other kind of milk are liable to both fine and imprisonment. The State Inspector wishes to obtain samples of milk from diseased cows, especially from cases of pleuro-pneumonia—they may be sent to his office in Paterson.

American Cutlery.—It is not many years ago that it was rather a severe test of one's patriotism to purchase an American knife, the chances being greatly against it being of serviceable quality. At present American knives are among the best. We are glad to know that in making scissors great progress has been made by our manufacturers. Large scissors or shears have long been produced of excellent quality, but small, delicately formed and highly finished scissors were until recently imported. There is no need to look abroad for scissors, to judge from a sample of the manufacture of Maher & Grosh, Toledo, Ohio, recently placed on trial. Of course one can not tell how they will stand the wear of months, but for present excellence, fine form and finish, they are exceedingly creditable and full of promise.

"The" Authority.—The street signs of New York are always interesting and especially so just after the May movings. A rural paper published in the City of New York celebrates its removal with a perfect eruption of signs. One of these reads "The American Horticultural Authority." "*The* Authority" is good, and it was well to put it on the sign, as it might not be discovered by reading the paper.

To Measure Corn in the Crib.—"R. A. S.," Douglass Co., Kansas, writes: "Get the contents of the crib or bin to be measured, by multiplying the length and breadth, and this product by the hight, all in feet Multiply the product by 4, and cut off the right hand figure. For example, the crib is 10 by 16 feet, and 8 feet high, 10x16x8=1280. Multiply the product 1280 by 4, makes 5120, and cut off one figure, giving 512, the number of bushels of corn. Should the corn be settled very tight, having been in the crib for six months or more, I multiply by 4½ instead of 4. I have bought and sold thousands of bushels by this method, and know it to be correct. Place this in your 'Boiled down' list, recommending it to be pasted on the barn door of all corn raisers." This is certainly a quick method.

The Hydrangea "Thomas Hogg."—No longer ago than October, 1876, we published an engraving of this Hydrangea, and described it as one of the most important of recent novelties. This spring we find it very generally for sale by the street venders of plants who offer it among verbenas, geraniums, and other plants at the stands near the markets. This shows two things: 1st, that the plant is of easy propagation, and 2d, that it itself possesses merits which will make it popular. Both of these are true of this; but we always regret to see persons buy plants forced into flower.

Prof. A. R. Ledoux.—We mentioned some months ago that Doctor Ledoux had resigned his position as chemist to the N. Carolina State Board of Agriculture. A few days ago we had the pleasure of a call from him and learned that he had already established himself in the city as a chemist and proposes to give special attention to investigations relating to agriculture.

Night Soil.—This name was given to the contents of privies, because the emptying of them is largely done at night. Its bad odor is the chief objection to its use upon the garden, and this is enough to keep it from being employed, unless it is first deodorized. Liquid from the privy vault may be used, by making holes here and there in the garden soil, filling them with the liquid manure, and replacing the earth after that has soaked away. We have raised very fine tomatoes in this manner.

Big Peruvian Corn.—"C. O.," Iowa. This corn is by no means new to this country; we figured some of the enormous kernels in June, 1866, and it was tried by several of our friends at that time. We observe that it is again introduced, and farmers are again asked to try it. There is no doubt but what it will grow—indeed, that is the trouble with it, it doesn't stop growing. Frost will come and find it still growing without even stopping to make a tassel. The variety is entirely unsuited to our climate. It would perhaps come to perfection in the southernmost States, and if it were worth while, one might by selection in a few years establish a variety that would be earlier in its ripening. We have not seen the ear, but are told that it is not only not large in proportion to the kernel, but is really quite small. Supposing it to be a different species from the common corn *Zea Mays*, some European botanist has called it *Zea Macrosperma*; big-seeded Zea. It is often called "Cuzco corn."

Granular Butter.—To those who have inquired in reference to the production of butter in the granular form, described in an article in April last, we would say that the peculiar condition is not due to the kind of churn that may be used. Just as good granular butter may be produced in the "Blanchard," or any other churn with a revolving dasher, as in any form of oscillating churn, it all depends upon stopping at just the right time, and that is, when the granules have formed, and before they have been compacted into a uniform mass, as they will be, if the motion of the churn be continued.

Fighting the White-Grub.—No pest of our farms and gardens is more destructive than the White-Grub. It is especially mischievous for the reason that we know nothing of its presence until it has done its work. Operating underground, and out of sight, but little can be done to destroy it. We have several times suggested that the only effective method of attack is when it is in the perfect or beetle state. Many are not aware that the parent of the White-Grub is the so-called "May-Bug," "June-Bug," or "Dor-Bug," as it is variously called, and which often makes its way into the house in the evening, attracted by the light, where it makes its presence known by a great deal of bustle and noise as it bounces about in a headlong manner. The few insects that come into the house give but little idea of the great numbers that are doing mischief elsewhere. In each locality the beetles are especially abundant once in three years, and were the cultivators of a neighborhood to unite, in the destruction of the beetles, the White-Grub would do comparatively little damage. Some beetles appear every year, but the great crop is once in three years As every female lays about 200 eggs, the importance of killing her before she has a chance to provide for that number of grubs will be seen. W. C. Stiles, Jr., Wood Co., West Va., has been acting upon our suggestion, and sends an account of his success Mr. S. uses a "Tubular Lantern" set in a discarded milk pan, an inch or two of water is placed in the pan, and a layer of coal oil (kerosene) is put upon the water. The first night he tried two traps like this, he caught 189 beetles; the second night he caught over 500, and proposes to continue their use so long as any are taken. Of course any good lantern will answer as well as the one he used. Unlike many others, this is destructive in its beetle state, feeding usually on the leaves of trees, especially the cherry-tree. In the years of their abundance, the trees in which they take refuge should be found, and in the morning, while they are torpid, the insects should be shaken off, caught upon sheets, scalded, and fed to pigs. Several pailfuls have been taken in this manner in a single morning. The much abused crow does good work in destroying the grubs. We know of a case in which they caught the grubs that were at work upon the grass of a lawn. We have no doubt that when the crow is accused of destroying the young corn, it is merely after the grubs that attack the plant. The skunk is known to destroy great numbers of the beetles.

Beautiful Pansies.—No doubt that many who have seen the colored plate illustrating Pansies, and published by Messrs. B. K. Bliss & Sons with their Catalogue, have supposed that the artist had exercised his imagination, both as to size, and the strange combinations of colors. So far from this being the case, the flowers are, if anything, rather below the real size, and as to colors, it would be impossible to conceive of any artificial colors more brilliant, or more strangely contrasted, than they are in the flowers produced by the remarkable strain of seeds secured by Messrs. Bliss & Sons. Some of the blooms are as near black as it is possible for a flower to be, and of a velvety texture of great richness.

Potatoes to Bermuda.—In conversation with a friend who was familiar with the Bermuda trade, we asked him what the steamers principally took on their return trip The reply was—"Everything eatable, including potatoes."—As "Bermuda Potatoes" are one of the principal exports from the Island, we supposed that the potatoes sent there were to be used for seed, but were informed that they were to be eaten—the planters finding it more profitable to sell their potatoes, than to eat them, as the price of a barrel of Bermudas, will buy several barrels of those from the States, and pay freight besides.

Bitter Milk.—"Mrs. A. N.," Jefferson, Tex., finds that her cows eat "Dog-fennel," and that the milk is on that account disagreeably bitter. We do not know of any help after the plant has been eaten. If any reader does, we hope it will be made known.

Millet Seed for Chickens.—"J. T.," Baltimore, Md., writes, that "those who know nothing of feeding Millet seed to young chickens, have something to learn. It does away with the customary slop attending the mixing of meal, and the seed may be swallowed by the smallest fowl. I use it altogether." There are now several things called "Millet," in cultivation; we suppose that our correspondent has reference to one of the *Setarias*, known as "Golden," "Mammoth," "Bengal," and "Hungarian Millet," and closely related to Hungarian Grass.

Pond Lily Culture.—"C. W." and others. We have not published any directions. A tub of some kind, some garden soil and water, are all the requirements. A tub may be made from a portion of a cask, and if desired it may be sunk in the ground. Place in the tub good soil enough for the roots, perhaps a quarter full will be sufficient; put in the plant; it is not necessary to plant it, merely pressing the stem into the soil will answer. The big affair which passes for the root is really the stem, which lays along the bottom of the pond. One side of this produces roots which take a strong hold of the soil, as every one who has tried to get up one knows, while buds producing the leaves and flowers are on the upper side. When the tub is filled with water, no further care is required during summer, except to supply water as it may be needed, as it is not likely that the rains will make up the loss by evaporation. Unless the tub can be so protected that it will not freeze solid, it should be removed to the cellar at the approach of cold water. Only enough water need be left in the tub when it is moved, than will be needed to keep the soil moist.

Mowing Machines.—It is estimated that 150,000 of these labor-saving machines are annually manufactured. There are 35,000,000 acres of meadow land in the United States, and the thought of mowing all this by the old method of the scythe, is enough to make one's back ache. Thanks to the inventive genius of a few men, that there is an easy and inexpensive, as well as rapid way, by using the mowing machines, many kinds of which are models of neatness and simplicity.

Food for Cattle Good for Fowls.—A while ago we had something to say about Weston's Food for Cattle, stating it to be a mixture of well known condiments and tonics, prepared in a convenient form for use. We have since been assured of its utility as a food for fowls and young chicks. From our knowledge of its composition, and of its effects upon horses and cattle, we should expect good results from giving it to fowls.

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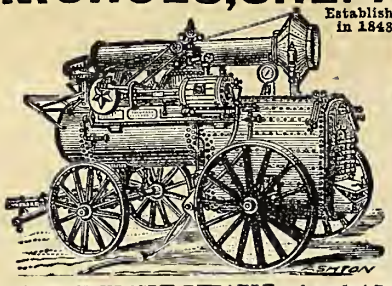

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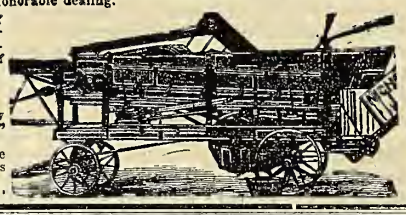

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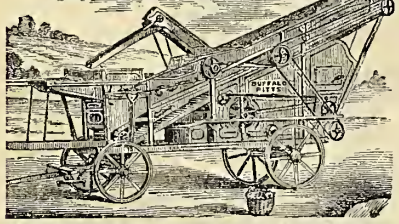

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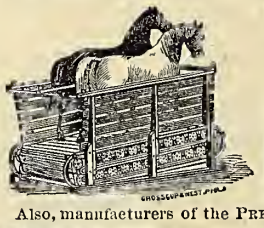

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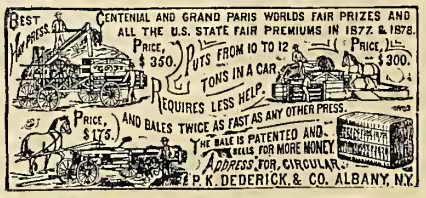

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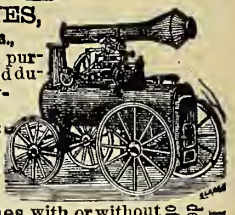

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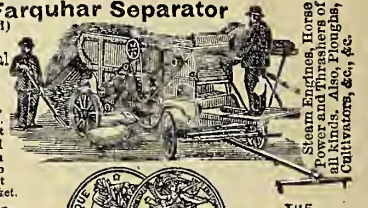

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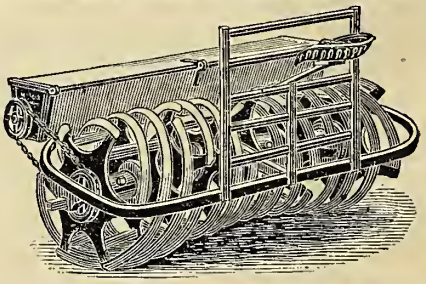

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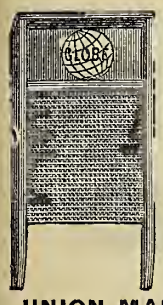

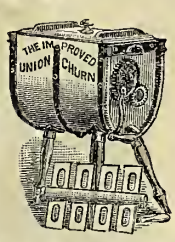

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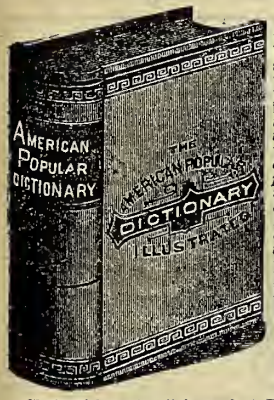

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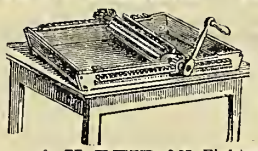

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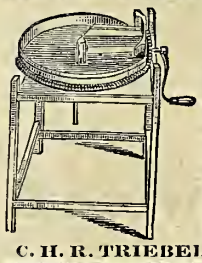

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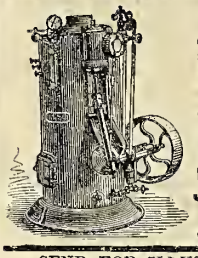

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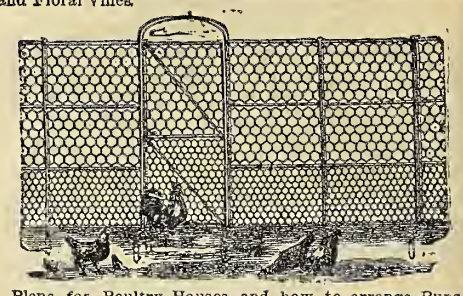

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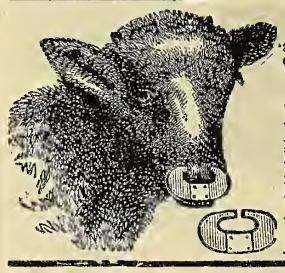

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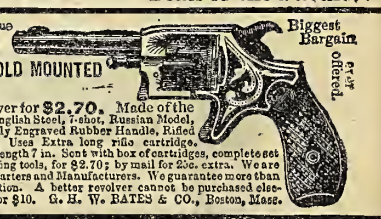

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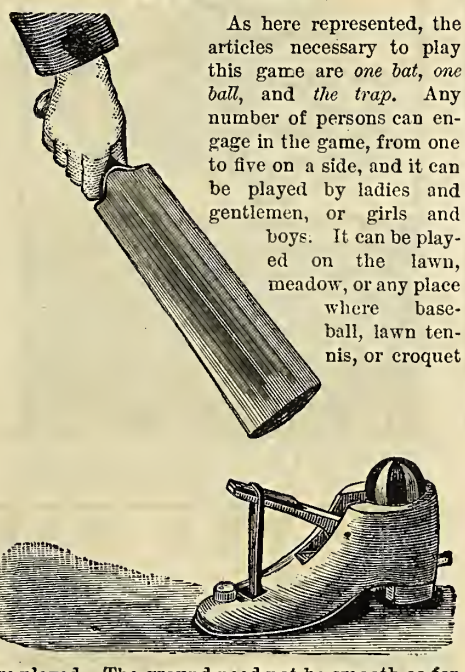

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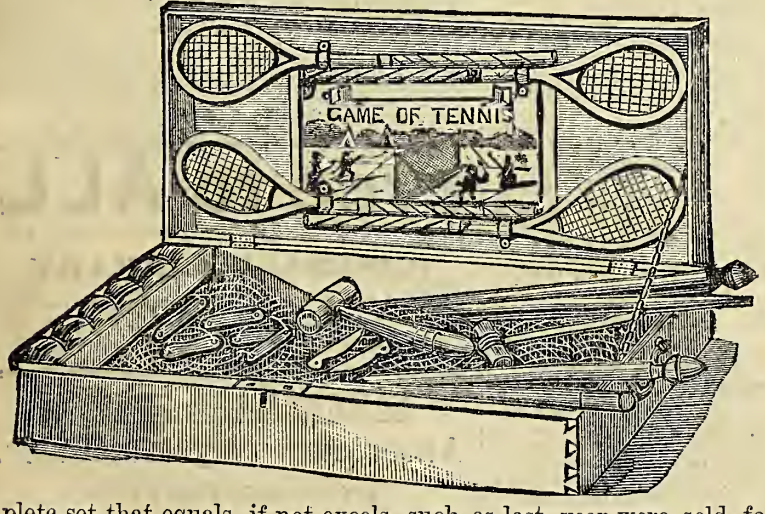

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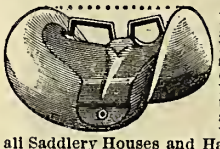

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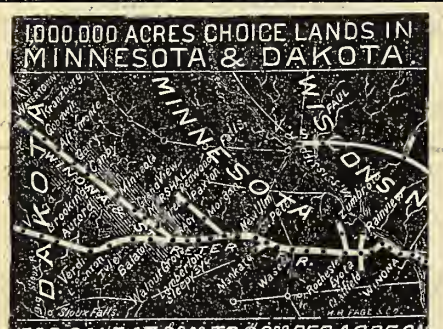

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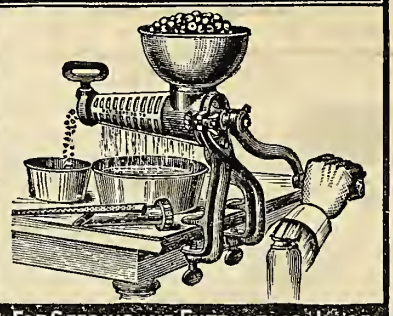

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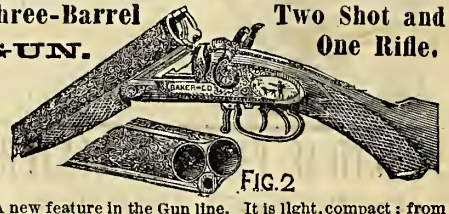

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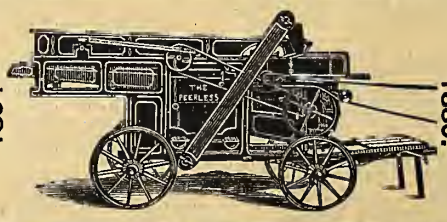
1854.  1880.

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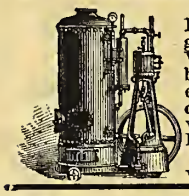

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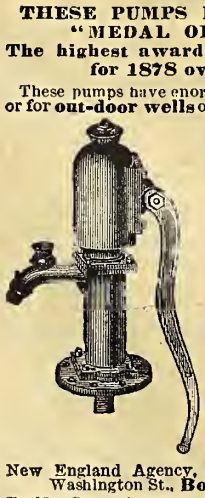

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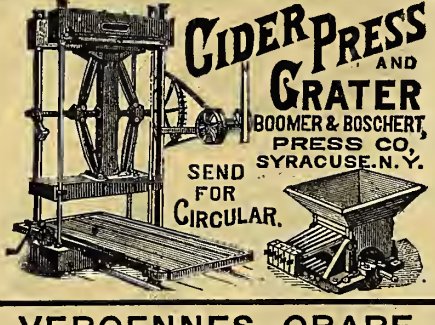

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A COOL, SHADY COW PASTURE.— *Drawn and Engraved Expressly for the American Agriculturist.*

There is an impression possessing the minds of many farmers that there is only one profitable place for a forest tree, and that is the "wood lot." To them a tree in a pasture is "a plant out of place," and therefore a *weed*, to be rooted out and destroyed. But there are good reasons why the cleared fields should not be entirely destitute of trees. In the first place, they add greatly to the appearance of the whole farm, making it more attractive, and therefore of greater value. A shady pasture is a comfort to the farm stock that is kept within its boundaries. The domestic animals—the horses, the cows, the sheep, and pigs, which we as farmers care for and feed, because they provide for our wants, are more than mere machines for our thoughtless running—they are living creatures possessing capacities for pleasure and pain, and therefore demand at our hands the kindest treatment. But there is another side to this question. The well cared-for animal is the one that pays the best returns. Looked at with the practical dollars and cents view, that care which best provides for the wants of the animal is the most remunerative. Every blow received by a cow at the hands of thoughtless help, costs the owner of the cow something either in milk, or flesh, or both. All pain does not result from violence, and discomfort is as unprofitable in its results as actual pain. If one doubts the discomfort of exposure to the sun of a mid-summer day in an open, unshaded field, it will not require a long experience to convince him of it. Man is not the only creature capable of being sunstruck. A few years ago one of the writer's cows, in the full flow of milk, fell off at once to almost nothing. Investigation showed that she had been thoughtlessly exposed all day in a pasture where there was no tree or other shade. In our plea for shade in pastures we are well assured that abundant returns will be found in the shade alone. But beyond this there is the tree itself. In planting a grove it should be remembered that a White Ash will make as good shade and more valuable timber than Soft Maple. There are often low places in a pasture-field in which a spring may be located, or through which a small stream flows—places where trees will grow vigorously, and still be out of the way should the pasture be turned into a grain field, because the land is not tillable. It is in just such secluded and shady places as these that the farm stock love to escape from the intolerable heat of the sun's rays on many a mid-summer mid-day. The accompanying engraving: "A Cool, Shady Cow Pasture" is a pleasing one, because it is the outgrowth of a true conception of what a pasture should be: namely, comfort and satisfaction to the dumb but appreciative animals, and pleasure and profit to the thoughtful, kind-hearted owner of the farm and the stock.

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Calendar for July, 1880.

1 Day of Month.	1 Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Mo'n rises.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Mo'n rises.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Mo'n rises.
		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	T	4 27	7 41	0 6	4 32	7 35	0 11	4 38	7 29	0 15
2	F	4 27	7 41	0 37	4 33	7 35	0 42	4 39	7 29	0 47
3	S	4 28	7 40	1 12	4 33	7 35	1 18	4 39	7 29	1 24
4	S	4 28	7 40	1 53	4 34	7 34	1 59	4 40	7 29	2 5
5	M	4 29	7 40	2 40	4 35	7 34	2 46	4 40	7 28	2 53
6	T	4 30	7 40	3 33	4 35	7 34	3 39	4 41	7 28	3 45
7	W	4 30	7 39	sets	4 36	7 34	sets	4 41	7 28	sets
8	T	4 31	7 39	8 16	4 36	7 33	8 12	4 42	7 28	8 9
9	F	4 32	7 38	8 43	4 37	7 33	8 41	4 43	7 27	8 38
10	S	4 32	7 38	9 9	4 38	7 33	9 7	4 43	7 27	9 6
11	S	4 33	7 37	9 32	4 38	7 32	9 32	4 44	7 27	9 32
12	M	4 34	7 37	9 56	4 39	7 32	9 57	4 45	7 26	9 58
13	T	4 35	7 36	10 21	4 40	7 31	10 23	4 45	7 26	10 25
14	W	4 35	7 36	10 48	4 41	7 31	10 52	4 46	7 25	10 55
15	T	4 36	7 35	11 21	4 41	7 30	11 25	4 47	7 25	11 30
16	F	4 37	7 35	morn	4 42	7 29	morn	4 48	7 24	morn
17	S	4 38	7 34	0 1	4 43	7 29	0 6	4 48	7 24	0 12
18	S	4 39	7 33	0 49	4 44	7 28	0 56	4 49	7 23	1 3
19	M	4 40	7 32	1 49	4 45	7 27	1 56	4 50	7 22	2 3
20	T	4 41	7 32	3 0	4 46	7 27	3 6	4 51	7 22	3 13
21	W	4 42	7 31	rises	4 46	7 26	rises	4 51	7 21	rises
22	T	4 43	7 30	7 54	4 47	7 25	7 52	4 52	7 20	7 49
23	F	4 43	7 29	8 24	4 48	7 24	8 23	4 53	7 19	8 22
24	S	4 44	7 28	8 51	4 49	7 24	8 51	4 54	7 19	8 51
25	S	4 45	7 27	9 16	4 50	7 23	9 17	4 55	7 18	9 19
26	M	4 46	7 26	9 41	4 51	7 22	9 44	4 56	7 17	9 46
27	T	4 47	7 25	10 8	4 52	7 21	10 12	4 56	7 16	10 16
28	W	4 48	7 24	10 38	4 53	7 20	10 43	4 57	7 15	10 47
29	T	4 49	7 23	11 12	4 54	7 19	11 17	4 58	7 14	11 23
30	F	4 50	7 22	11 50	4 55	7 18	11 56	4 59	7 13	morn
31	S	4 51	7 21	morn	4 56	7 17	morn	5 0	7 12	0 3

PHASES OF THE MOON.

MOON.	D.	BOSTON. H. M.	N. YORK. H. M.	WASH'N. H. M.	OHA'STON H. M.	CHICAGO. H. M.
New M'n	7	8 37 mo.	8 25 mo.	8 13 mo	8 1 mo.	7 31 mo.
1st Quart	15	1 32 mo.	1 20 mo.	1 8 mo	0 56 mo.	0 26 mo.
Full M'n	21	4 18 ev.	4 6 ev.	3 54 ev.	3 42 ev.	3 12 ev.
3d Qnart.	28	6 57 ev.	6 45 ev.	6 33 ev.	6 21 ev.	5 51 ev.

AMERICAN AGRICULTURIST.

NEW YORK, JULY, 1880.

Hints for the Work of the Month.

[*The Hints and Suggestions in these columns are never copied from previous years, but are freshly prepared for every month, from the latest experience and observations, by practical men in each department.*]

Harvesting.—The work of harvesting the wheat, oats, barley, etc., should be begun before the grain is fully ripe, as it is less liable to shrink and is therefore heavier and of a better quality. The straw is worth more if the crop is cut before the grain is fully ripe, an important consideration on every farm where straw is used for fodder. There is also less waste from the shelling of the grain in the process of harvesting; while the work can be performed without that hurry and rush which must be experienced if the grain is left until later. A delay from unfavorable weather does not involve a serious loss when the work is begun early, and in season.

Corn.—The cultivator should be kept going, to both kill the weeds and pulverize the soil and keep it damp and mellow. When the corn gets large the horse should be muzzled that he may not be nibbling at the corn and forget his work among the abundant green fodder. It should be kept in mind that the work of cultivating the corn crop has a great influence upon the growth of the crops that are to follow. The full returns for work done in the corn field are not all in when the corn is gathered, a point that should always be borne in mind.

Summer Fallow.—A summer fallow was formerly considered the proper preparation for a wheat crop. Where hoed crops are introduced into a regular rotation of crops, the desired cleaning of the land and pulverization of the soil may be effected without resorting to the more expensive method of fallowing. This being the case, the increase in the amount of roots grown will diminish the acreage devoted to summer fallow.

Wheat.—When wheat follows oats in the rotation, the stubble may be stirred with a cultivator to give the scattered oats a chance to sprout before plowing for the wheat crop. If the oat crop is harvested before the grain is fully ripe, as it should be, there is less need of this precaution.

Turnips.—Flat turnips may be sown this month for early feeding. Although not so profitable for the main crop as Swedes or mangels, they have their place in a farm system that economizes labor by its uniform distribution throughout the season. Flat turnips are not to be recommended as feed for cows giving milk, but they are valuable for sheep, especially in making a gradual change from grass to the dry feed of winter.

Fodder Corn may be sown in succession as directed in June, as late as the middle of this month. The small quick growing varieties are to be preferred. The latter part of July and through the month of August, in our northern climate, the pastures get dry in average seasons, so that a modified soiling system is desirable to secure a full supply of feed for the cows and horses.

Fodder Crops in the shape of Millet or Hungarian grass may be sown during the early part of this month, and as the bay crop is very light in many places, a fodder crop of some kind will be more than usually important this year. The soil for a fodder crop should either be naturally rich or made so by manuring, or it will not pay to prepare it for any of these quick growing grains which have but little time in which to make their growth, and must get to a good size in order to be profitable.

Meadows.—As soon as may be after the hay is gathered give the meadows a good top dressing of fine manure. This will produce a thick bottom growth to shade the ground and prevent the soil from drying up and injuring the roots of the grasses.

Water Supply.—An abundant supply of pure water is essential to keep animals in a healthy and thriving condition. The importance of pure water for animals is too often overlooked. Impure water is a fruitful source of disease to animals as well as man, and the quality of milk is impaired when cows are compelled to drink at stagnant pools.

Cows giving milk should not be allowed to fall off in quantity from insufficient feed. It is more difficult to increase the flow of milk after a shrinkage from lack of full feed than to keep up a high activity of the secretion by artificial feed. When the habit of diminished milk secretion at a particular time of year is established, as it will be by repetition, it is not always easy to prevent it entirely by liberal feeding. The habit will also be transmitted to the offspring as a family characteristic that will diminish the value of the animal as a producer of milk. Give the cows extra feed so soon as the pasture begins to get short.

Horses need good care in these hot days of midsummer. They should be kept clean by frequent currying and occasional washing of the legs and feet. The flies will cause the most inconvenience, and while working in the field some protection from them in the shape of nets or thin blankets (sheets) is a great comfort to the animals. Keep the stables clean that they may not harbor the flies or develop any bad odors. Horses that are at regular farm work need good food—better than grass alone will give. Oats or ground feed of some kind must supplement the pasture at night.

Sheep can care for themselves if they have a shady pasture supplied with good water. The matter of a ram to be used later in the season should be considered now and secured in time, if not already on hand. A full-blood will often improve the flock.

Pigs.—A run in a good clover stubble will be beneficial. The yards should be kept as clean as possible. A quantity of copperas sprinkled about the pens will deodorize and disinfect the place very satisfactorily and cheaply. Young pigs should be pushed now if they are for early market. A rapid growth secured now is of the greatest importance. If the stock is not what is desired begin to improve it at once by securing a pure-blood boar of some good breed to use in the herd.

Poultry.—Chickens hatched this month will, if well cared for, be large enough to get through the winter safely. It is not best to set any hens after July. Vermin breed very fast in hot weather and great cleanliness is necessary.

Growing Seed Corn.—It has been conclusively shown that any grain can be improved by a careful and continued selection of the seed. This is especially true of corn—and it is a grain in which a selection can be most easily and thoroughly car-

ried out. Any farmer can select a given portion of his corn field for seed, and can thin, remove suckers, poor stalks—those with imperfect ears, etc., and in that way increase the growth of the best ears, with sound and vitally strong grain.

Late Potatoes will need constant watching for the Beetle, which should not be allowed to do any damage; kill the insects at their first appearance by an application of poison.

Buckwheat as a late crop to fill out with, when another has been removed or failed to grow, can be sown up to the middle of the month. A bushel of seed per acre is an abundance to sow.

Cleanliness.—The utmost neatness should be exercised about the premises in the hot weather. Garbage of every kind should be disposed of before it becomes decayed and is giving off a bad odor.

A Compost Heap is the proper place for all decomposable waste material. It should be situated in an out-of-the-way place, but near at hand, so that all weeds, waste, and decomposable litter of all sorts, may be carted upon it quickly and easily.

Notes on Orchard and Garden Work.

The cultivator, whether of the orchard or garden, should make it a part of his programme to take a vacation, and this from necessity must come in mid-summer. This can be devoted merely to recreation—a most excellent use to make of it—or it may be turned to good account in making visits to others engaged in the same pursuits. A grape grower, for example, can make no better investment of his time and money than to go to Hammondsport or some other town on Lake Keuka, and from there visit the many neighboring vineyards. The nurseryman should go to Rochester or Geneva, N. Y., where he will find the largest nurseries in the country. Other cultivators can readily find centers where special attention is given to the things in which they are interested, and a visit to these will not only afford recreation, but will be very sure to pay in the instruction that an intelligent observer can always gain from seeing the operations of others.

Another matter should receive early attention—preparation for the autumn fairs. The fair season will begin in a little over two months, and it is none too early to consider the matter. The local fair, whether county or other, should receive the attention of every cultivator, whether he belongs to the class called "amateur," or to the "professionals," as those who cultivate plants of any kind as a business are called. A lively competition for the prizes, no matter how small these in themselves may be, is the only way in which a fair, large or small, can be made useful to the community. Every cultivator should make it a point to show his best products, and if any one exhibits better ones than his own he may be sure that there is something about varieties, or their cultivation, that he should learn. Besides these smaller fairs, those engaged in any branch of horticulture as a business, should show their products at the State or other large Fair, if only for the sake of making himself and his business known. It is none too soon to decide what shall be exhibited at the coming fairs, and what prizes upon the schedule are to be competed for, and to give the articles early attention in order that the exhibit may be a creditable one. If one competes for varieties of pears, as an example, for the half dozen or dozen to make the "plate," should be selected before hand, and all smaller and poorer fruit near them on the tree be removed in order to secure the greatest possible development of those selected. So with other fruits, and a like course is to be pursued with vegetables, flowers, etc.

Orchard and Nursery.

Budding.—So soon as the bark of the stock will "run," that is, when it raises readily, and the buds are well formed, the budding may be done. In August, 1877, we gave full directions with illustrations, and as we can not repeat every year, the reader who is in need of such instructions is referred to the number mentioned, which if not at hand, can be sent by us, post-paid for 15 cents.

Thinning.—It will pay to thin the fruit from overloaded trees, even though it is getting late. The fruit that remains will be of better size and quality, and the benefit to the tree, especially if it is young, will make it pay for the labor of thinning.

Grafts will need to be looked to; they must not be interfered with by surrounding branches, some of which may need to be cut away. All grafts growing too vigorously should be pinched back.

Pruning can be done during this month. An open head to the tree should be kept in mind, that the air and sunlight may readily reach the interior.

Marketing.—The early fruit will be largely marketed this month. Too much care can not be exercised in having it put up with neatness. Tidy packages neatly marked and filled with selected fruit, always bring a good price, even when the market is full of inferior fruit. Get and hold a reputation for uniformly good fruit—as it pays.

Tent Caterpillar.—The nests that have escaped the earlier rounds should be destroyed, or these greedy "worms" will rapidly strip the trees of their leaves, and thus greatly retard their growth.

Codling Moth is best caught by using bands of hay or paper put around the trunks of the trees. Remove the bands every week or so, and kill the insects that have gathered beneath them.

Blight is the most mysterious of all the enemies which affect the success of the fruit frower. Other troubles either give warning of their approach, or are to be traced to some direct cause. With this, the fruit grower's only knowledge of it is the death of a part of the tree, and uot rarely the whole of it. The tree that was yesterday a model of thrift and productiveness, will be to-day a mass of dead wood, bearing scorched and blackened foliage, a cumberer of the ground. When it appears, cut away the portions killed, removing the whole tree if found necessary.

The Fruit Garden.

Grape-Vines.—For the first two years a stake is a sufficient support, after which some kind of trellis should be provided. Keep the shoots you wish to preserve well tied up, and as others start remove them. The little branches that are coming out at the point where the leaf joins the main stem, are the *laterals*, which should be pinched back to the first leaf, and if it makes another start, pinch it back again. Stop any shoots by pinching when they are as long as desired. The insects that appear are in most cases best removed by hand-picking.—See article on this subject on page 273.

Mildew appears first in white patches on the under surface of the leaves, and afterwards upon the fruit, and should be kept in check by using the Flowers of Sulphur, applied with a bellows on a still morning. It is best to apply the Sulphur when there is dew upon the vines, or just after a rain, as the dry powder sticks to the vines better. The sulphuring should be repeated at intervals of a few days until the mildew disappears. Bellows for the purpose are sold at the seed and implement stores.

Currants.—If the fruit is for making jelly, pick it when well colored and before it is dead ripe, but if to be eaten fresh at home, it should remain on until thoroughly mature. The long shoots that push up from the interior of the bush should be broken off while young. Any other thinning that is necessary may be done now with advantage.

Blackberries and Raspberries.—Those canes that are to be left for fruit bearing next year should be stopped by pinching at 6 feet for Blackberries, and 4 feet for Raspberries. All other shoots are to be treated as weeds and cut away early in their growth. So soon as the fruit is off the old canes have finished their work, and should be cut away.

Strawberries.—When the picking is over, remove the mulch of straw, etc., give the soil a good coat of manure, well forked in, and keep the bed clean of weeds. If the single row system is followed, the runners are to be kept cut off, unless plants are wanted to set new beds. In the alternate system the runners are to be encouraged to make plants in the forked and manured "paths" between the old rows. Pot layering is now quite extensively practised, and is to be commended for private gardens. It consists in sinking small pots filled with rich soil in the soil of the bed into which the runners may strike their plants; afterwards plant, soil and all is transferred to the new bed. Plants thus obtained will bear a good crop the next season.

Kitchen and Market Garden.

We made special mention of the value of the hoe and rake in the garden last month, and it can not be too forcibly stated that upon their frequent use the success of the vegetable garden depends; at this time, when the planting is pretty well over, the tending of the growing crops is the principal work.

Asparagus.—Let the plants grow up and form a dense mass of green. Pull out any large weeds—the shade will prevent the growth of small ones.

Beans.—Bush sorts, like the "Refugee," may be still planted for late use and pickling. The Limas, if very vigorous, and inclined to run beyond their poles, may be pinched at the top of the pole.

Beets.—Sow for a succession for greens and young roots. Keep the weeds out and the soil loose.

Cabbage and Cauliflowers.—Set for late crop in a rich soil, and watch for the worms, which, if they appear, may be killed by the use of hot water.

Celery should be set now, in rows three feet apart and six inches in the row. The trench system is entirely superseded by that of cultivating on the level surface and blanching late in the season by throwing up the earth in ridges around the plants.

Carrots.—Hoe so long as the tops do not interfere with the work, and thin when too close.

Corn.—Early sorts may be planted for late use and drying. The seed of the best specimens should be saved for planting next year.

Cucumbers.—Dust with ashes to keep off the "bugs" and other insects. Pick the small fruit every day for pickles. Those two inches long are best.

Egg Plants.—By using liquid manure, the plants may be forced greatly. The fruit should be kept off of the ground, by using a layer of straw.

Melons.—The late set fruit will not ripen, and had best be removed. Save seed from best specimens.

Onions.—When the tops lie down, the onions are ready to be harvested. Store in a cool airy place after being thoroughly dried in the sun.

Sweet Potatoes.—The vines should not become rooted at the joints. Move them when hoeing.

Squashes, unlike the sweet potatoes, may strike root at the joints with advantage. Keep the bugs off.

Tomatoes.—Use some sort of trellis to keep the fruit from the ground; if there is no trellis, use brush or even hay to keep the fruit from the ground.

Flower Garden and Lawn.

The main work now is to keep everything in order.

Lawn.—The mower must be frequently used, and the corners, borders, and out-of-the-way places "trimmed up" with a sickle. Any large weeds that come up, should be dug out by the roots.

Walks and Drives will need an occasional hoeing and raking, and the roller passed over to smooth and harden them. The margins should be neatly trimmed with large shears at frequent intervals.

Bedding Plants need much care, as they grow rapidly, and unless the knife is frequently used, will get in bad shape, and attractiveness is lost.

Dahlias, Gladioluses, etc., will need stakes to support them, but simple unnoticeable poles firmly driven into the soil are preferable to painted sticks.

Climbers are to be looked to, and care taken that they have ample means of support.

Annuals and Perennials, should have no weeds amongst them. Unless seeds are to be saved, cut away the clusters as soon as the bloom fades.

Greenhouse and Window Plants.

This is the most difficult time of the year to make the greenhouse look attractive. The beauty and attraction are now out-of-doors. Much shading must be done, with either heavy coats of whitewash on the glass, or by using muslin. Frequent watering and wetting down of the walks, etc., is necessary to keep the house cool. Fumigate at frequent intervals. Get stock of moss from bogs if the weather is dry, and soil from the woods.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our record kept daily during the year, show at a glance the transactions *for the month ending June 10th*, 1880, and for the corresponding period last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
22 d's *this* m'th	401,000	3,605,000	4,117,000	102,000	291,000	1,108,000
23 d's *last* m'th	345,600	2,214,000	3,210,000	76,000	301,000	881,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
22 d's *this* m'th	347,000	23,794,000*	7,491,000*	156,000	——	2,337,000*
23 d's *last* m'th	326,000	24,856,000*	6,983,000*	207,000	292,000	2,453,000*

* Including sales for forward delivery.

2. *Comparison with same period at this time last year*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
22 days 1880	401,000	3,605,000	4,117,000	102,000	291,000	1,108,000
27 days 1879	447,000	4,510,000	3,107,000	385,000	339,000	952,000
SALES.	*Flour.*	*Wheat.*	*Corn*	*Rye.*	*Barley.*	*Oats.*
22 days 1880	347,000	23,794,000	7,491,000	156,000	——	2,337,000
27 days 1879	502,000	10,763,000	6,215,000	603,000	101,000	1,469,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush
June 7, '80	1,251,384	105,412	61,464	26,425	461,490	184,747
June 10, '79	1,981,368	744,320	118,773	128,542	217,046	84,549
June 11, '78	1,487,700	676,626	148,389	197,507	603,152	233,285

4. *Exports from New York, Jan. 1 to June 10.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
'80	1,781,000	23,105,000	16,476,000	982,000	271,000	124,000	28,500
'79	1,316,000	18,872,498	13,873,494	1,848,600	100,800	326,400	173,450
'78	1,119,950	20,252,242	10,805,561	1,904,500	1,477,800	747,400	252,200

CURRENT WHOLESALE PRICES.

	May 10.	June 10.
FLOUR—Super to Extra State	$3 65 @ 5 25	$3 35 @ 5 00
" Super to Extra South'n.	3 75 @ 7 50	3 35 @ 7 00
" Extra Genesee	5 25 @ 6 50	5 00 @ 6 25
" Superfine Western	3 65 @ 4 80	3 35 @ 4 50
" Extra Western	4 35 @ 8 50	4 00 @ 8 50
" " Minnesota	4 75 @ 8 50	4 10 @ 8 50
RYE FLOUR, Superfine	4 65 @ 5 25	4 60 @ 5 00
CORN-MEAL	2 50 @ 3 20	2 50 @ 3 15
CORN-FLOUR, per bbl	3 25 @ 3 90	2 90 @ 3 50
OAT MEAL, ℘ bbl	4 25 @ 6 50	4 50 @ 6 50
WHEAT—All kinds of White.	1 20 @ 1 26	1 20 @ 1 30
" Red and Amber	1 00 @ 1 30	1 15 @ 1 33
" Spring	1 00 @ 1 26	1 05 @ 1 22
CORN—Yellow	52 @ 56	55 @ 58
" White	51 @ 56	55 @ 58
" Mixed	50 @ 53	52 @ 55
OATS	40 @ 50	39 @ 47½
RYE	90 @ 92	96 @ 98
BARLEY	55 @ 1 00	Nominal.
HAY—Bale, ℘ 100 lbs	70 @ 1 00	70 @ 1 05
STRAW, ℘ 100 lbs	50 @ 1 05	50 @ 1 15
COTTON—Middlings, ℘ lb	11¾ @ 11⅞	11⅞ @ 12
HOPS—Crop of 1879, ℘ lb	27 @ 40	27 @ 40
" " 1878, ℘ lb	7 @ 18	7 @ 20
" olds, ℘ lb	4 @ 12	4 @ 12½
FEATHERS—Live Geese, ℘ lb	40 @ 55	45 @ 52½
SEED—Clover, West. & St. ℘ lb	5¼ @ 7¾	6¾ @ 7¾
" Timothy, ℘ bushel	2 40 @ 2 65	2 40 @ 2 65
" Flax, ℘ bushel	1 40 @ 1 60	1 40 @ 1 55
TOBACCO, Kentucky, &c., ℘ lb.	3 @ 14	3 @ 14
" Seed Leaf, ℘ lb	6 @ 40	6 @ 40
WOOL—Domestic Fleece, ℘ lb	30 @ 58	28 @ 55
" Domestic, pulled, ℘ lb	25 @ 56	25 @ 56
" California	17 @ 42	18 @ 38
TALLOW, ℘ lb	6 @ 6⅛	6 @ 6⅛
OIL-CAKE—℘ ton	— @ 32 00	32 50 @ 33 00
PORK—Mess, ℘ barrel	10 50 @ 10 90	11 35 @ 11 40
Extra Prime, ℘ barrel	9 50 @ 10 00	9 50 @ 9 75
BEEF—Extra mess	10 50 @ 11 00	10 00 @ 10 50
LARD, in tres. & bbls, ℘ 100 lb	7 15 @ 7 65	6 80 @ 7 40
BUTTER—State, ℘ lb	14 @ 25	13 @ 21
" Western, poor to f'cy, lb.	9 @ 25	9 @ 20
CHEESE	8 @ 13½	8 @ 12½
EGGS—Fresh, ℘ dozen	9 @ 12½	10 @ 13
POULTRY—Fowls, ℘ lb	6 @ 14	8 @ 14
" Chickens, ℘ lb	14 @ 35	18 @ 34
" " ℘ pair	40 @ 1 00	35 @ 90
" Roosters, ℘ lb	— @ —	4 @ 6
Capons, ℘ lb	20 @ 26	18 @ 22
Turkeys—℘ lb	9 @ 13	8 @ 11
Geese, ℘ pair	1 00 @ 1 50	1 00 @ 1 50
Geese, ℘ lb	10 @ 13	— @ —
Ducks, ℘ pair	50 @ 80	50 @ 80
" ℘ lb	10 @ 18	— @ —
PLOVER, ℘ doz	1 50 @ 2 00	1 50 @ 2 00
PIGEONS, ℘ dozen	50 @ 2 75	40 @ 2 50
SNIPE, per doz	50 @ 2 25	20 @ 2 00
APPLES, ℘ barrel	2 50 @ 5 00	2 00 @ 4 50
STRAWBERRIES, ℘ quart	10 @ 25	3 @ 12
GOOSEBERRIES, ℘ bushel.	— @ —	7 @ 10
CHERRIES, ℘ lb	— @ —	5 @ 15
POTATOES, new, per bbl	3 50 @ 5 50	2 00 @ 5 00
" ℘ bbl	1 25 @ 1 75	1 00 @ 1 75
" Sweet, lb bbl	2 50 @ 3 25	— @ —
TOMATOES, new, per box	50 @ 90	60 @ 3 00
TURNIPS ℘ bbl	75 @ 1 25	75 @ 1 25
" white, new, ℘ 100 bun	— @ —	75 @ 2 00
BEANS—℘ bushel	1 25 @ 1 75	1 25 @ 1 75
PEAS—Canada, in bond, ℘ bu	— @ 84½	82 @ 85
" new, green, ℘ bag	— @ —	— @ —
" new, per bbl.	1 50 @ 3 50	2 00 @ 5 50
STRING BEANS, new, p. crate	75 @ 2 00	75 @ 2 50
CARROTS, ℘ bbl.	1 25 @ 1 75	1 50 @ 3 00
BEETS, ℘ 100 bunches	— @ —	1 50 @ 3 00
" new, per crate	1 75 @ 2 00	— @ —
CABBAGES, new, ℘ bbl	1 00 @ 3 25	1 50 @ 3 50
ONIONS—℘ bbl	3 50 @ 4 50	— @ —
" ℘ crate	— @ —	1 75 @ 3 00
SQUASH, ℘ bbl	1 50 @ 1 75	1 50 @ 2 00
" ℘ crate	— @ —	25 @ 50
SPINACH, ℘ bbl	1 25 @ 1 75	50 @ 75
ASPARAGUS, new, ℘ doz. bun	75 @ 2 50	75 @ 1 75
RADISHES, new ℘ 100 bun	50 @ 1 50	1 00 @ 1 25
CUCUMBERS, ℘ 100	75 @ 1 50	— @ —
" ℘ crate	— @ —	1 75 @ 2 50
LETTUCE, ℘ bbl	— @ —	1 50 @ 2 75

Increasing ease in money has contributed to activity at the Stock Exchange, where values—though variable—have been generally on the advance; and served also to stimulate dealings in Real Estate at improving prices.... As usual at this season of the year, general merchandise has been comparatively dull, the demand narrowing down to the most urgent requirements of buyers, who have been enabled in several instances to obtain concessions, under a more or less decided pressure to place supplies....Cotton has diminished perceptibly in the interest shown by operators, whether for prompt or forward delivery; and has hardened slightly in price, as the offerings have not been very urgent....Wool has also been in light request and has further declined, leaving off irregularly, pending the free receipt of the new clip...Naval Stores and Petroleum have been advanced, partly through speculative dealings, and have shown more animation.... Provisions have been moderately active, but have been quoted, in nearly all instances, lower. Offerings of Butter have been on a liberal scale. Cheese has recently met with more attention, in good part from shippers, and closed with some indications of firmness on the more desirable makes. Eggs have been on the advance within the past few days, on a better demand....Breadstuffs have shown decided activity—largely on speculative account, which has been accompanied by more or less serious disturbance of values. Wheat felt the influence of speculative manipulation, most notably No. 2 Red, of the Winter grades, having been the favorite, was run up very rapidly against operators having deliveries to make on May contracts—touching, at one time, as high figures as $1.46½@$1.47; but, following the May settlements, broke down to $1.30@$1.32, and left off at about $1.30@$1.31, with corresponding depression and disturbance in options,—especially for June,—which month is now the center of the speculative interest. Increasing receipts, rather unfavorable foreign market advices, and generally encouraging crop reports worked, near the close, against operators for another advance. Corn ruled higher through the earlier dealings, but has weakened materially within a few days, as the supplies have been gaining on the requirements of buyers. Oats have also fluctuated widely,—leaving off much lower, on freer and urgent offerings. Rye has been in light stock and wanted for export at much higher figures. Flour has been generally on the decline, on a moderate movement for home use and shipment. The visible supplies of Wheat—embracing the hoards at lake ports, in transit, and on the seaboard—at latest dates, embraced about 20,395,000 bushels,—of Corn, 15,785,000 bushels; of Rye, 365,600 bushels; of Barley, 487,000 bushels, and of Oats, 2,731,000 bushels, against on January 31, an aggregate of 30,100,000 bushels Wheat, 13,100,000 bushels Corn, 979,000 bushels Rye, 4,155,000 bushels Barley, and 3,080,000 bushels Oats. Ocean Grain freights have been unusually active—largely in the speculative line—but at lower rates, closing rather stronger, including by steam to Liverpool, 3¾*d*.@4*d*. per bushel; to Bristol, by steam, to 7*d*. per bushel; to Antwerp, by steam, to 8¼*d*. per bushel, and by sail to Cork, for orders for vessels of average carrying capacity—say 3,000 to 4,000 qrs.—4*s*. 3*d*.@4*s*. 6*d*. per qr. of 480 lbs.

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
May 17	15,787	49	6,254	34,443	32,922
May 24	14,409	25	6,532	32,997	33,413
May 31	16,188	39	6,683	36,812	26,240
June 7	15,362	37	5,644	38,356	23,723
Total for 4 *Weeks*	61,746	150	25,113	142,638	126,298
do. *for prev.* 5 *Weeks*	67,425	341	23,499	132,524	182,925
	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week	15,436	37	6,278	35,659	31,574
do. do. *last Month*	13,485	69	4,700	26,505	36,585
do. do. *prev's Month*	12,591	181	1,974	26,481	31,593

Prices for beeves the past four weeks were as follows:

WEEK ENDING	*Range.*	*Larger Sales.*	*Aver.*
May 17	8 @10¾c.	8¾@ 9½c.	9¼c.
May 24	8¾@10½c.	8¾@ 9½c.	9⅜c.
May 31	8 @10¼c.	8½@ 9¼c.	9⅛c.
June 7	8¼@10½c.	8¾@ 9½c.	9¼c.

Beeves.—The receipts for the first week were very heavy, with a large call for export, and a good demand for home use. The market has been unusually steady throughout the month, and it will be seen from the table of averages that there has been but little rise and fall in this market. The decline in the third week was caused by the extreme heat, which made the market dull, but with a quick recovery—and at date of writing both exporters and home traders are operating freely with an active market. Colorado corn-fed cattle sold at 8¾@9c. Choice native steers, to dress 56 lbs., brought 8¾@10c., and a few selected to dress 57 lbs., sold at 10¼@10½c.....
Milch Cows.—There has been a great falling off in the number of cows sold; the average not being much above one-half that of last month. The very light arrivals have been sold at prices ranging from $25 to $50....
Calves.—A very liberal supply and the warm weather caused a slow market in the middle of the month. Buttermilk calves were dull and not wanted except at low figures. Prime Veals were in some demand; mixed lots of the former sold at 3@4c.. and select Veals at 5½@5¾c. with a few exceptionally fine at 6c....**Sheep and Lambs.**—The receipts at the first of the month were large, and the market was under the control of the buyers. Lambs were abundant and dull at first, but the demand increased through the month, until the last week, when they were again abundant and at low figures. Colorados 3¾@6½c. for choice wethers....**Hogs.**—There has been a considerable falling off in the receipts of hogs. Market quoted nominally at 4¾@5c. at the close of the month; none for sale alive.

The Horse Market.—There is a moderate business in horses though the spring trade is over. Dealers are confident that selling rates will have to be lower for common stock. A few fine animals are coming in from abroad—among them is a fine Norman Stallion from France to go to Ohio. Street-car horses sold for $110@$130, and good work horses at $150@$200. Good carriage teams, according to speed, etc., ranged from $450 to $800.

Prices of Feed.

Cotton-seed meal,	per ton.	$30.00
Linseed-cake meal	"	37.50
Middlings	"	24.00
Bran	"	23.00
Corn-meal	"	23.00

Prices of Fertilizers.

Nitrate of Potash (95 per cent.), per lb.	8 @8½c.
Sulphate of Potash (potash 44 per cent) per lb.	3½@4 c.
do. do. (potash 27½ per cent) per lb.	1½@1¾c.
German Potash Salts (potash 12 to 15 p.c.) p. ton.	$16.00@18.00
Muriate of Potash (potash 50 per cent), per lb.	2 @2¼c.
Nitrate of Soda, per lb	5@5¼c.
Sulphate of Ammonia (25 per cent.), per lb.	4 c.@4¼c.
Dried Blood (ammonia 13 per cent) per ton	$40.00@45.00
No. 1. Peruv. Guano 9 p. ct. ammonia, standard, ℘ ton.	$55.00
do. do. Lobos, do. do, do.	46.00
do. do. guaranteed, ℘ ton, cargo K.	56.00
Soluble Pacific Guano, ℘ ton	45.00
Excelsior Fertilizer Works, Fine Ground Raw Bone,	55.00
Mapes' Complete Manure (clay soils) per 1,000 lbs.	25.50
do. do. do. (light soils) per 1,000 lbs.	25.50
do. do. do. "A" Brand, (wheat) ℘ 1,000 lbs.	20.00
do. Beet do. per ton	49.50
do. Cabbage do. do.	47.50
do. Tobacco do. do.	52.00
do. Fruit and Vine Manure, per ton	37.00
do. Asparagus Manure, per ton	51.00
Stockbridge Rye Manure, do.	45.00
" Wheat do. do.	45.00
" Seeding Down Manure, do.	40.00
Bowker's Wheat Phosphate, per ton	40.00
Baugh's Raw Bone Phosphate, per ton	33.00
Baugh's Manure for Tobacco and Grain, per ton	45.00
Walton, Whann & Co.'s Raw Bone Phosphate	40.00
Gypsum, Nova Scotia, ground, per ton	8.00

Potash Salts.—"H. L. B.," Erie Co., Pa. The articles on "Science Applied to Farming" in the *American Agriculturist* for November and December, 1877, and April, 1880, give full information about the German Potash Salts. It is impossible to lay down rules for their use to apply to all cases. The only way is to "try and see." They both succeed and fail on all sorts of soils, from gravel to heavy clay. For potatoes they are generally profitable. For clover, corn, and grass they do well as often as they fail. For wheat, oats, etc., they are less commonly profitable. Such is the testimony of our field experiments and of general experience. For general use, the muriate, with 80 per cent or more of chloride of potassium, corresponding to 50 per cent or over, actual potash, and sold at $40.00 to $45.00 per ton, is the best grade to buy, because it furnishes more potash for the money than any other. For tobacco and potatoes the sulphates are recommended on the ground that they have a better effect upon the quality of the crop. But they are harder to obtain pure, are more costly, and, so far as the testimony of our experimenters goes, the muriate brings potatoes of excellent quality. The Leopoldshall Kainit is a low grade potash salt, averaging about 12½ per cent actual potash, and consisting largely of common salt. It is not to be recommended unless it can be had at very low rates; it is not worth more than $13.00-$16.00 per ton.

Hen-Manure.—"S. C.," Lynn, Mass. Hen-manure varies greatly in composition and value, according to the food of the fowls; whether they are growing or laying eggs or not; and especially how much it is decomposed; and how much water, earth, straw, etc., it contains. Three samples analyzed at the Connecticut Experiment Stations gave from 44 to 71 per cent of water, 0.8 to 0.9 (8 to 9-tenths of one) per cent of nitrogen, 0.4 to 0.6 per cent phosphoric acid, and 0.4 to 0.5 per cent potash. That is, they had about one-tenth as much of the most valuable fertilizing ingredients as No. 1 Peruvian Guano. The samples had about as much phosphoric acid and potash, and twice as much nitrogen, as ordinary horse or cow-manure. At valuations current for commercial fertilizers they would be worth about $5.00 per ton. The water and earthy matters amounted in each of the three samples to a little over four-fifths of the whole. The pure dry dung would contain some 4 per cent of nitrogen, 2 per cent each of phosphoric acid and potash. The reasons why the pure dung is so inferior to guano, which is notably bird dung, and contains (No. 1 Standard) over twice as much nitrogen, and six or seven times as much phosphoric acid, are mainly, that the guano birds live on fish, a far richer food than that of hens, and that the hen-manure is moist and apt to lose considerable nitrogen by decomposition (fermentation, "heating," etc.)

Profitable Farming.—In the conclusion of a long letter to an exchange, Dr. J. B. Lawes remarks; "Although the process and conditions of growing wheat in England, and corn in Maryland, differ in certain respects, still it is my opinion that in both countries, the largest crops will be found to be by no means the most profitable." Beyond a certain point of high culture farming becomes of the "fancy" sort, but in general, our's is not of that sort, and for good reasons will not be, for some time to come: The West is large and still fertile.

Interesting Announcement

FOR ALL YE BOYS,

From 5 to 105 Years Old!

Scroll or Fret Sawing is one of the most delightful amusements, combining pleasure, utility, and a development of taste and skill. Every home, however humble or magnificent, is more beautiful if adorned with brackets and other work produced by home hands. Hundreds of thousands of such homes now exist, where only the slow and tedious hand-frame fret saws have been available. More recently the foot pedal and multiplying wheels have come into use, and the increasing demand has tended to cheapness and improvement. We are now happy to announce another LARGE ADVANCE in

Perfection, Cheapness, and Portability,

by which is secured stronger, better working machines; a material reduction in price, and a great saving in cost of carriage or delivery, as well as in storage room when not in use, with sundry other improvements and advantages.—All the above are secured in

Beach's New Folding Fret Saw.

Figure 1 shows it ready for use, while in half a minute or less it can be folded (*without removing the saw*) to the form, figure 2, occupying but a quarter of the space, to be set away, or put in a small box for sending anywhere at small cost for carriage. By a simple arrangement the table is lowered to a convenient working hight for a boy of 5 or 6, or raised high enough for the tallest man, and at every hight it stands *firmly*.

It has a tilting table, and will execute very fine scroll-work or inlaid-work. The clamps will firmly hold any saw, from the finest No. 00000, up to No. 10; they are readily and quickly inserted or changed. A space of 20 inches behind the saw allows quite as large pieces to be worked as any other instrument of the kind in the market.

By an ingenious arrangement, there are no dead centers, but the wheel starts right off the moment

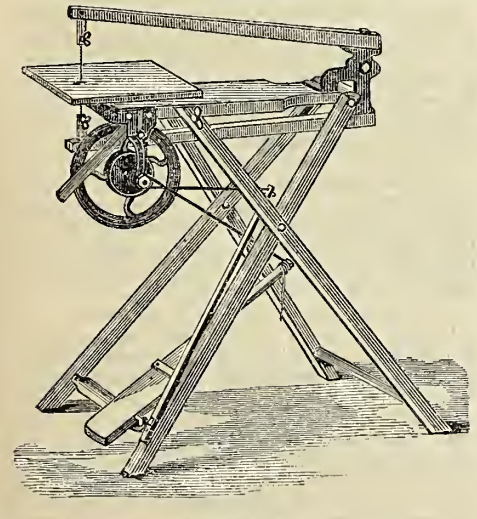


Fig. 1.—BEACH'S FRET SAW READY FOR USE.

the foot presses the pedal, while it can be instantly stopped by simply pressing the knee against a brake. The upper clamp is hinged to be thrown up for changing the saw, or for inside work. The working parts are iron or steel, finely fitted, securing great durability, while the frame, of tough white ash, or other *tough* timber, is formed to secure the greatest strength. The whole is so *simple* that A CHILD CAN WORK IT. Parents will appreciate the convenience of such an instrument, of full size, yet quickly folding up so as to be set in the corner of a closet if desired. Though as strong and durable as any one could desire,

The Weight is only 15 lbs.

With all the above advantages, and its great superiority over any other hitherto produced,

The Price is only $2.25,

which includes full instructions, so that a beginner can go to work at once. It is packed in a neat box and is delivered to any express office in New York City FREE. The small space required, and the lightness, will reduce the cost of carriage very greatly, as compared with other machines for similar work.

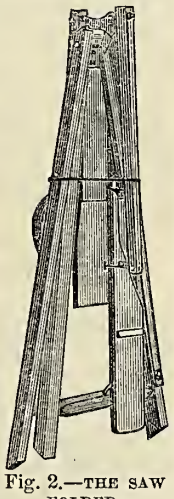


Fig. 2.—THE SAW FOLDED.

The Editors and Publishers of the *American Agriculturist* were so pleased with this new machine that they at once secured the control of it for the benefit of their readers, though it will be supplied to others as soon as it can be produced in sufficient quantity. It will be forwarded by express or otherwise, as directed, in the order of calls for it, at **$2.25** each; or

FREE as a Premium.

A special object in taking hold of this new machine was to secure it for our new Premium List now in course of preparation.

In the meantime, any one will be presented with one in return for *four* yearly subscriptions to the *American Agriculturist* at $1.50, or for eight half-year subscriptions (July to December inclusive) at 75c. each. On receipt of address we will mail our full instructions for using this charming Scroll Saw.

Some Things this Number Contains.

Numerous helpful hints about the Work of the Month, will aid many in this busy season; see pages 254 to 256.

One of the special features of this number is the Second Prize Essay on KEEPING ONE COW, which should be read by every subscriber; pages 270-271.

Plans and specifications for a Country and Village House, costing $3,500, will meet the actual wants of many who desire to build a neat and commodious dwelling. Page 264, with numerous illustrations.

Further experience on the subject of Fences and Fencing, is given on page 261.

Prof. Atwater gives a thorough treatment of the subject of Hungarian Grass, on page 261.

The Humbugs are sundry and important; pages 258-259.

An interesting and instructive article may be found on Training Animals on page 269.

A very practical Plan for Planting Fruit Trees, by S. B. Parsons, with diagram, may be seen on page 273.

For a variety of Household information, including Faith Rochester's entertaining and instructive Notes, see pages 276-277.

The Boys and Girls will know where to turn for their Special Department, and will not be disappointed; pages 278 to 280.

The Basket is unusually full of short items, on various important subjects, pages 257-260, 286-290.

The *Army Worm*, so destructive to farm crops, receives the full attention it deserves, page 260 and 262.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

To Subscribers to "Land and Home."—Special Notice.—The subscribers to "Land and Home" will receive the *American Agriculturist* for the remainder of the time for which they have paid their subscriptions to that journal. Those who have already paid in advance for the *American Agriculturist* will have their time extended for an equivalent period. In other words, whatever may have been due in subscriptions to that journal when it discontinued, will be made good by supplying the *American Agriculturist* at the current rates.

Where to Get Things Wanted.—Many *thousands* of letters come to the Editors every year (some with and some without "return postage"), asking where they can obtain from trustworthy parties, implements, animals, poultry, seeds, plants, fertilizers, and a great variety of other things, all of which questions we try to answer when we can. But nine out of ten of these letters, and much valuable time of both writers and respondents, would be saved, if the inquirers would take the little trouble required to just look through the advertising columns, where usually, in one number or another, several parties announce the very things asked about. We try to keep out all parties not trustworthy. If any mistake occurs, after all possible care, we can only acknowledge to having been deceived, *for we do not admit any advertisers whom we would not ourselves patronize when wanting the things they offer.* (The Editors have the "veto power" over any and every advertisement proposed for these columns.) It will always pay to read through the business columns to see what is offered and by whom, and useful hints are often derived from reading what others say and how they say it. New ideas are thus started up in one's mind.—When corresponding with any of our advertisers, or sending for catalogues, etc., it is well to state that you are a reader of *this* Journal. They will know what *we* expect, and what *you* expect of them as to prompt and fair treatment.

SEE:—All interested in the hidden truths and beauties of nature should SEE them, and this can be done by the aid of a *good Microscope*. SEE a full account of the *American Agriculturist* Compound Microscope, page 286.

To Get Rid of Chicken Lice.—Vermin is the pest of poultry, and when chicken houses get thoroughly infested, it is not an easy matter to cleanse them. If the house is washed with a hot lime wash, and the roosts are rubbed with a mixture of kerosene oil and lard, the lice will be made uncomfortable, and if this treatment is repeated a few times, the house and also the fowls will be quite free from vermin. If the house is, as all poultry-houses should be, detached from barns and other buildings, it may be fumigated. Shut it up tight and close every opening. Then place a pan of live coals on the ground (or if it must be on a wooden floor, put down a few shovelfuls of earth, or coal ashes, to hold the pan). Throw on a handful of lumps of brimstone, and get out quickly, closing the door tightly. If the work has been thorough, no lice can be found at the end of a few hours. The white-washing, etc., may be then done.

Stumps.—It is not wise to employ any expensive methods of getting out the stumps on a new piece of land, that is not from location, or otherwise of very great value. It is in most cases cheaper to let stumps rot out. There is a general desire to clear and clean a piece of land all at once, but as in many other things, it may be, "the more haste, and the less speed." The use of dynamite, or any other quick acting and expensive method, is recommended only when the room the stump occupies, is worth a considerable more than the trouble and expense of taking it out while green and difficult to remove.

Insure Farm Buildings.—The average farmer, when his barns are full of grain and hay, can be almost ruined by a fire unless he is well insured; and it is at just that time that barns are most frequently destroyed by fire. Lightning comes mostly in the summer months, and is a common cause of barn fires. It is best to be insured in a good company near at home.

The House Plan.—For several months we have been giving our readers plans and estimates of cottages or houses of moderate cost, and suitable for only a small family. This month a larger, more commodious dwelling is presented in all its details, and will doubtless answer the ends of many, who contemplate building a house that will cost in the neighborhood of $3,500.

Two Acres—What can be done on them.—There are books on "Ten Acres Enough," "Five Acres too Much," "My Farm of Four Acres," etc., all interesting and instructive to many people; but for a short, concentrated, telling account of what has been done, is being done, and can be done on "Two Acres," we commend the reader to go through with the Essay on "Keeping One Cow," on page 270 of this paper.—There is hardly a cultivator in all the country, whether of a large or small farm, or of the smallest village plot, that may not get some useful hints from Mr. Battles' plain account of his method and the results.

The Dog for the Farm.—If a farmer stands in need of a dog, he should have a good one. The farm dog to be a profitable adjunct of the farm should have duties to perform, and should possess certain valuable qualities that will enable him to do his duties well. He should be a faithful watcher of persons and property, and at the same time of a kind disposition. He should be gentle to the live-stock of the farm, and above all, obedient to his master. A good farm dog is a very knowing one.

Pig Labor.—Some one has recommended the pig, as just the creature to work upon the compost heap, and keep it thoroughly stirred up by frequent rooting for stray ears of corn, that are purposely placed in the heap. Swine only pay on the farm, when all their efforts are bent, first towards making a frame, and next to the laying on of fat, and anything that leads them away from this work, is a source of loss. The pig as a farm laborer, to be used for turning the compost heap, is a failure, and the farmer who goes on the principle that pigs may be made "beasts of burden" in the sense of getting profitable work out of them, is, to say the least, not on the right track.

Poll Evil.—This trouble is an abscess at the back of the head where it joins the neck, and is not serious unless it reaches the bones or joints of the neck. The remedy consists in opening the abscess, to allow the accumulated pus to escape, after which the cavity is dressed with a solution of half a dram of Chloride of Zinc, to a quart of water. If the neck becomes stiff before any remedy is applied, the animal is in many cases beyond help.

Summer Day Comforts.—Many of our readers have promptly availed themselves of our proposal, in the June number, to furnish substantial "Hammocks,"—now so popular as summer day comforts,—at a moderate price. We make, of these articles, a special offer for July, which will interest our subscribers and others, and will be found on the last cover page.

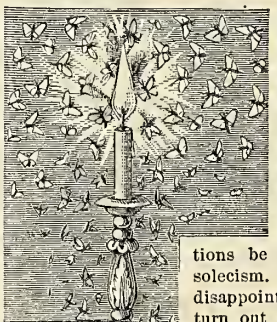
Paper Barrels.—Machines capable of making 200 paper barrels daily are now in operation. Strange as it may seem, barrels for sugar, kerosene oil, lard, and even gun powder, are now made out of a paper pulp.

Stones in the Meadow.—As the knives in the mowing machine strike against the loose stones in the meadow, or become broken by the small ones that get between the guards, they are not pleasant reminders that these obstructions should be removed from the surface of the meadow. There is no better time for doing this, than just after the grass crop has been taken off, while the surface is comparatively bare, and the stones often loosened by the horse rake, and other haying implements. A few hours now spent in gathering up the loose surface stones, will be well spent, and may prevent a serious break to the mowing machine, and that in a hurried time of work.

"A Vine."—"W. S. H." The specimen was nothing but fragments when it reached us; when the plant flowers send again. While sometimes we can *guess* from the leaves only, we never feel sure unless we have the flowers; the fruit is often necessary for determination.

Success with Small Fruits, by Edward P. Roe, New York: Dodd, Mead and Company. This book is phenomenal in every respect. The art of our best artists, and the highest skill of the wood engraver are here made to illustrate such prosaic subjects as grubbing a stony field or to make beautiful and attractive the most stupid and monotonous work of berry picking. The author brings the graces of a style that have given him a place among the popular writers of the day, to tell how berries are grown, picked, and marketed, and quotations from books upon his business desk are more frequent than are those from the books of his library. A large share of the work appeared as a series of articles in "Scribner's Monthly." These are brought together, copiously augmented by other matter, and form a sumptuous volume of over 300 ample pages. The engravings may be regarded as of two kinds, fruits and fruit-growing scenes. In representing the fruits, while a great amount of skill is shown in presenting them artistically, any tendency to exaggeration has been wisely repressed, and they show the varieties at their best without sacrifice of their accuracy as pomological portraits. These are the most important engravings, the others being more embellishments—and beautiful ones they are. Both the humorous and the sentimental aspects and suggestions of fruit culture have afforded themes to such artists as Homer, Gibson, Sheppard, Mrs. Foote, and others. As to the text of such a work, the author can hardly hope to give much that is new. Its great value consists in its foundation of hard facts. If the facts are not sure, no graces of literature, or charm of illustration can make the book of any value. The title of the work, "Success with Small Fruits" indicates its scope. The author has been successful; he tells the methods which led to that success, and gives instructions that may be safely followed, and gives them in an attractive form, as he well understands the art of "putting things." Not the least interesting portion of the work, and that which has the best claim to novelty, is the description of strawberry culture in the Southern States, and it has also afforded themes for some of the most pleasing pictures. In a work of this kind the author's most difficult task is to give his estimate of the relative value of varieties; he is sure to invite discussion if not make some enemies. If he is a dealer in plants, he is placed in a delicate position, as there are those who are ready to attribute even moderate praise of a variety to a desire to make sales. Fortunately for this author, he has already established a reputation for fairness in this respect, and has been quite as ready to point out the faults of his own seedlings as those of others, and in the present work he has given the opinions of others as well as his own. We may sum up our opinion of this work in two words—Beautiful and Useful. Sent by mail from this office at the publishers' price, $5.00.

Sundry Humbugs.



For once we are disappointed—we were about to write agreeably disappointed, but refrain out of deference to those who hold that the term expresses an impossible condition, and that whoever claims that disappointment can under any conditions be agreeable, commits a solecism. Nevertheless, we *are* disappointed that things did not turn out as we expected they would, and are glad that they did not. With the general revival of business that set in when specie payment became an assured fact, we expected that the large class who get their living by their wits would experience a renewed activity; that the old trade of getting something for nothing would start with new life, and that fraud and swindling would present themselves in new disguises to all the more readily ply their calling. But while honest trade and labor are prosperous, humbugs do not "boom" at all. In all these past years of dullness, in no year, including that of "the panic," has there been such a lack of activity, such an utter dearth of novelty, than

THE LAST FISCAL YEAR—

beginning with July last—has shown, and the last quarter of that year has been marked by a dullness that is almost painful in its intensity. We doubt if in the past 15 years there has been a trimester (as they say at Cornell University) that did not produce some entirely new swindling scheme, or at least an old one so rehabilitated that it was as good as new, except this last. Are we to infer from this that the world is growing better? We wish we could. But we fear that it is only the hush that precedes the outburst of the storm. It must not be inferred from what we have said that no swindling is going on, and that money no longer passes from the pockets of the credulous to those of the sharper who gives no equivalent in return. We refer only to the utter absence of new tricks. Perhaps the most marked feature of the humbug market just at this time is a partial revival of one of the oldest of frauds. The offerers of

THE QUEER, OR COUNTERFEIT MONEY,

were, just after the war, more numerous than any other class of swindlers. In our humbug column of those days it was not rare to give the names of a dozen or more chaps or firms claiming to have bad money which they wished to sell for good. The game flourished for a time, but it was so thoroughly exposed in all parts of the country that it dwindled and finally quite died out. There was a period of a year or two in which we heard nothing of it; then it gradually resuscitated, and of late it has regained some measure of its old-time activity. Indeed, in a budget of letters relating to humbugs, which, considering the season, is quite large, about half relate to this fraud. As this old affair is new to many of our readers, we describe it in brief. If we had a collection of the various circulars that have been sent out in the prosecution of this swindle through all these years, it would be as great a curiosity in the literature, as is

THE ROGUES GALLERY IN THE PORTRAITURE,

of rascality. One of Dickens' characters, Miss Moucher, had a great variety of names for the rouge and other beautifiers she sold to her lady patrons, but the vocabulary of counterfeit money is much larger. Just now the favorite name is "Cigars." The cigar circular is too long to copy in full, but we give sufficient of it to show its style and drift:

"Dear Sir:—My traveling agent, who passed through your section recently, informed me that you were a man of a speculative disposition like myself, and that you were willing to make money rapidly, provided it could be done safely. To come to the point at once, I am a manufacturer of **Cigars** made of Green Tobacco. I am the only person who has been engaged in this business in this vicinity for years. I am not only an expert in the business myself, but I employ none but the best talent in the country to assist me. Everything in connection with my business is as well organized and as well conducted as any business in the land. My **Cigars** though not genuine, are as difficult to detect as anything can be. I presume that you understand me. I do not ask you to send money in advance, nor will I send my goods on credit, as I can sell all I wish to persons for cash. * * * I desire you to come on to the city and examine my stock at your leisure. * * * My prices are as follows:—For $150 I will allow you $1,200; for $250 I will allow you $3.500; for $350 I will allow you $5,500. The sizes of my **Cigars** are Nos. 1, 2, 5 and 10. You will understand I am willing to allow you $300 in goods for your railroad expenses. You are at liberty to bring a friend with you if he has money. But bring a man who can keep a still tongue. If you make up your mind to come, notify me at what hotel you may stop here. If you are not familiar with the name of a suitable hotel here, write to me and I will furnish you all the information you desire. * * * Do not bother me about small orders or samples which are usually sent by mail. An inquisitive postmaster, or some one who is in the habit of getting your mail for you, may be tempted to open your letters. In case you intend coming on immediately notify me three or four days in advance of your starting, so that I can be prepared for you. Read the printed slip inside very carefully. Remember that this circular is sent to very few. * * * It is printed in my private office."

The "printed slip" referred to is a new dodge. The slip, apparently cut from some paper, gives an account of the arrest of a man who had $8,000 in new money in his valise, on suspicion of being a counterfeiter. But the "Cashier of the Third National Bank was sent for, who, after a critical examination of the bills, pronounced them to be genuine"—and the man was discharged. A very neat way that, of showing how excellent was this batch of "cigars." But all do not beat around the bush and have other names;

THEY OFFER COUNTERFEIT MONEY

in their circulars, which set forth its great excellence, and coolly inform the one who receives the document that he has already taken and passed some of the very same bills without knowing it. These circulars, in all their different forms, have a few features in common. They all present the chances of making money rapidly and without risk, in a taking manner. All claim that the senders will act in the most honorable and upright manner, and all warn the one who receives them that the business can not be done through the mails, but only in a personal interview. We can imagine the indignation which our readers, especially those who have not known of the matter, must feel at receiving such a circular, which contains nothing less than a proposition to

BECOME A COUNTERFEITER'S ACCOMPLICE.

It is quite natural that an honest person should feel that he is doing wrong, knowing what he does (or what he thinks he does) in not doing something to bring the rascally maker of the proposal to justice. Some of the letters we receive are quite amusing. The writer usually suggests that we hand the matter to the police authorities, but sometimes one will propose a regular plan for the capture of the counterfeiter and his money, and offers to come to the city for the purpose of putting it into execution. The matter seems to be beyond the reach of the law. If one of the chaps could be detected in selling his "Cigars" or counterfeit money, he could be easily brought up, but in the whole affair, notwithstanding the minute description in the circulars, there is

NO COUNTERFEIT MONEY IN THE CASE.

Among the thousands of such circulars sent monthly to all parts of the country, now and then one will fall into the hands of a person who is ready to make money dishonestly if he can do it without detection, or one of obtuse moral sense who does not consider anything wrong that pays. The sharper arranges the preliminaries with a person, who is to go to a designated third-class hotel and engage a room; he is to have his $100 of good money ready and to receive $1,000 of "Cigars" in exchange. It all works well—buyer pays his good money, and gets his counterfeit in a neat packet. Eager to see his new purchase, he is about to open his parcel, when he is stopped by the other, who tells him that as he came into the hotel below he "saw that there were a couple of detectives on the look-out; I heard some talk about counterfeiters, and I would advise you, with all that counterfeit money in your possession, to be a little careful; I would advise

yon to get out as soon as possible, and as our business is done, I'll bid you good evening"—and goes. It is very likely that the thoroughly frightened victim will start for home at once. Sometimes the sharper is so polite that he will see the other safely to the ferry-boat or train. Sooner or later the purchaser inspects his counterfeit money. He finds upon opening it that he has

A PACKET OF NEATLY CUT NEWSPAPERS,

and his good money gone beyond recovery. Enough of transactions of this kind become known, to show that they are of more frequent occurrence than one would suppose. Sometimes a victim is foolish enough to complain to the authorities, but if the victim is a person of any shrewdness he will see that to complain is to expose the fact that he was willing to become a "shover of the queer," which is rogue's slang for passing counterfeit money. This is one of those frauds that can injure no honest person. No one can become its victim without first acknowledging that he is willing to defraud others, and such can get no sympathy from any one....

THE FARMER WHO SIGNED HIS NAME,

this time hails from Pennsylvania. Heretofore he has lived mostly in New England and New York, with a few of him in Michigan and the West; but we do not think we have heard of him in Pennsylvania before. But it is the same old story, only it is not mowing machine sharpeners, or other machinery, but this time it is a Fertilizer. "Two well dressed men of pleasing address, drove up to the house of Mr. Samuel Brown."—These are always in couples, always well dressed, and have pleasing address, and always "drive up" somewhere—how many times have we read it! The "Well-Dressed" represent the Company that makes the Fertilizer. Only a few selected agents are to be appointed in each county. Nothing to pay until the stuff is sold. The "Well Dressed" had inquired among other farmers, and learned that Mr. B. was the proper man to be appointed as agent—Mr. B. thought so too—so it was agreed. The "W. D.," would report to the "Company," and the Fertilizer would be sent.—"As a mere matter of form you know,"—the W. D. had to send in a statement, to show that they had appointed a substantial agent, so out come pen and paper. "How much land have you Mr. B?—and what is it valued at?—Horses?—Cattle?" etc., etc.,—"and not encumbered by any mortgage?"—"Oh no."—There, please look that over Mr. Brown, all correct isn't it?—Please put your name to it as a memorandum—mere matter of form you know."

BROWN GOES AND DOES IT.

The "W. D." go—days and weeks go—Fertilizer don't come, but a note does. It was left for collection—in a distant city, but to oblige Brown, it might be paid at the bank in the village near by. $198.83 is the amount. Brown declares he never signed a note for that amount, and won't pay it. We hope that he won't.....Last month it was silver plated ware, just now

IT IS A SOLID ROLLED GOLD RING,

about which inquiries are made. A party advertises to send for 25 3c. postage stamps, a "Heavy Plain Band Gold Ring," and several have sent us the advertisement, and asked if it does not belong in our Humbug Column. We do not see why. The advertisement offers to send a gold ring for 25 three cent stamps. We see nothing about the advertisement that makes us doubt that the stamps will bring 75 cents worth of Ring. If any one expects to get any more than 75 cents worth of Gold Ring, Red Herring, or Soft Soap for 75 cents, he has lived in this selfish world to little purpose, and is altogether too "child-like and bland," to endure the disappointments that the future has in store for him....In the medical line, all other curative agents are overshadowed by the toys called Electric Batteries. Indeed, we are just now enduring what may be termed

A BOOM OF THE BATTERIES,

and the number increases; new batteries with new claims are offered. We can not say that the later comers claim to do any more than the first ones did, for those would cure *everything*, but these propose to do it in a different way. A few months ago we noticed a Boston Battery which was an improvement on the others, as it drove out disease, and then kept it out by means of a pad, which absorbed it. Now we have another Boston Battery far ahead of the other. This not only sends out disease, but

SENDS IN THE MEDICINE,

for do we not read of "Dr. Rhodes' Electric Transfusing Battery. The only Battery in existence capable of being charged with medicinal properties which can be transfused into the system." This, moreover, differs from other batteries in being worn on the spinal column instead of on the breast. In whatever respect these batteries may differ from one another, they all agree in one particular: each one claims that his is the only useful one, and that all others are of no account. The latest is

PROFESSOR CALDWELL'S MAGNETO GALVANIC,

and the circular setting forth its merits is a remarkable document. There is a picture of a man without any battery, labelled "Before Using," and another picture of a man with a battery, and this is labelled "After Using." Now if these pictures are accurate representations of the man before and after, we protest against its use. One has only to wear one of these things, and his own mother would not know him. A rogue has hereafter no need to go to Canada to escape justice. All he has to do is to wear one of these batteries, and if these pictures are true, he becomes another man altogether. We have already told about Boyd's Battery and his claim that his electricity

"WAS FORMED IN GIMLET SHAPE."

It may do well enough for Boyd, but Caldwell, being a "Professor," has nothing to do with gimlet-pointed lightning. According to Caldwell, electricity is "ejected from the Battery in a circular current, similar to the action of a ball after being shot from a rifle, and enters the system in that shape, twisting and turning until it has spent its force." Uncharitable persons might say that with the exception of substituting a rifle-ball for a gimlet, that this reads just like Boyd's circular. But great geniuses often hit upon the same ideas. Our readers can now have their choice. Those who prefer their's gimlet-pointed will take Boyd's, but if they prefer to have it "twisting and turning" in rifle-ball style, Caldwell's is the battery for them. Sensible people will let all these batteries alone, as the most useless humbugs of the day.

"Pussly."—This plant, which is with some the type of meanness, is known botanically as *Portulaca oleracea*, and is a near relative of the beautiful Portulaca of the flower garden. The range of this weed is a large one, as the following names which it bears in different countries show. In Germany it is known as *Portzelkraut*, in France, *Porcellaine*, and *Pourpier*, in Italy, *Porcellaria*. The spelling of the English name has varied some; as for example, the old English writers have *Purcellaine*, and *Porcelayne*, but with us, while a few say *Purslane*, the name is generally shortened down to simply "Pussly." Whatever the name, or the spelling of the name, of the plant may be, it remains the same rapid growing, plump and low spreading weed, that it was centuries ago, when it was called *Porcella*, the diminutive of *porcus*, a pig, probably on account of its greedy feeding and quick growth. Still it is not all bad. As a weed it is a great promoter of industry; a gardener must be wide awake during the hot weather, or "his 'pussly' will get ahead of him." Its seeds are very pretty when magnified, and as a table vegetable, it is not to be despised. The plump succulent stems with their leaves, are boiled tender, and dressed with butter the same as spinach. The French market gardeners cultivate it regularly, and have different varieties.

Keeping a Record.—A habit of noting the ancestors and date of birth of the larger stock of the farm, even though it be not "full blood," is a useful one. If a record is of so much value for the best stock, it is at least worth the keeping for the good grade cow, or the mixed bred horse. It is often a great convenience to know to what animals a cow in question traces her parentage, and it may be of money value to be able to show the record.

Time to Cut Timber.—July and August are the best months for cutting timber, that it may be the most durable. The growth of the year is now well nigh over, and if the trees are allowed to lie until the green foliage dries upon them, the greater portion of the sap is thereby withdrawn from the wood and the seasoning is rapid and perfect. Cut in mid-summer, insects are much less liable to attack the wood, which is an important point with some kinds of timber like the hickory, etc.

Angora Goat Company.—The Legislature of Virginia, has recently granted a charter for the incorporation of a company, to be known as the "Virginia Angora Company." Up to the present time in this country, the growth of the Angora goat has not been a source of very great income to those thus engaged, but with a considerable demand for the goods made from the hair of this goat, and the admirable adaptation of portions of Virginia to the animal, we may reasonably anticipate a profitable issue to the new impetus given to the Angora goat enterprise.

The Cow Essay.—We wish our readers interested in the keeping of one or more cows—and the list must be a long one—would read the capital essay given on page 270, and see how thoroughly practical it is from the beginning to the end—how full of valuable information in all its parts to the thousands interested in good milk.

How to Use Hen-Manure.—Dry muck, loam, or other earth, will retard or prevent the fermentation and hold the ammonia that is formed. Water enough to keep quite wet will do the same in cool weather. Plaster with enough moisture will also absorb the ammonia, but dry plaster will not. The custom of mixing lime and ashes with hen dung is wrong. They drive out the ammonia instead of holding it. Mouldiness implies, and smell of ammonia (heartshorn) proves, decomposition and loss of ammonia. But the smell of ammonia is extremely pungent, and unless it is very strong, not much loss need be feared. Since the chief fertilizing ingredient of hen dung is nitrogen, and it has so little phosphoric acid and potash, it is rather a stimulating than a lasting manure. Many farmers use it for corn. But nearly all of our experiments (see *American Agriculturist* for March, April, and May) imply that this is poor policy, since corn gets but little help from nitrogen and responds best to phosphoric acid and potash. A little in the hill, however, well mixed with earth, may be very useful to give the crop a start. Hen dung is useful for potatoes, garden vegetables, or indeed almost all crops, including strawberries and other small fruits.

The Horse Fork Neglected.—While the excellent labor-saving machinery for sowing, caring for, and cutting the farm crops, have been very generally appreciated and employed, the means for placing the grass and hay in the barn, have been far too frequently neglected. The improved and almost perfect horse forks have claims upon the farmer, that he is slow to acknowledge. We used to think the hardest work of the haying and harvesting was the "pitching off," but when we put up one of those grappling forks and set it at the work, with a horse as the power, the hard labor was changed into a sort of half sport. The horse fork is one of the great recent inventions, and deserves to take a front rank among those machines that lighten the labor of the farmer, and at the same time allows his work to be done in the most rapid manner in that portion of the season when he is the most hurried and every aid is appreciated.

Cultivated Wheat and Hessian Fly.—It is now a well established fact, that the Hessian Fly is much less troublesome on wheat that is sown in drills, between which the cultivator is passed now and then during the early growth of the grain. Two fields of wheat growing side by side, one of which is cultivated and the other not, but alike in all other respects, seem strong proof of the truth of the above statement.

Red Ants, one of the worst pests of the household, may be trapped by placing a greased plate where the ants can get to it, when in a short time it will be covered with the ants adhering to its sticky surface. The ants may be wiped off and killed, whenever the plate becomes covered, and the trap set for another "catch."

Heavy Pigs.—"A. T. H.," Rensselaer Co., N. Y., seeing a notice of some heavy pigs in the February number, sends an account of others worthy of mention. On March 13th, 1853, Mr. Thomas Hoag, of Tomhannock, N. Y., had from a sow of his own breeding, 10 pigs, of which the combined weight was 35 pounds. In looking them over a few days after, he concluded to see what he could make of them. He kept an accurate account of all feed given, except the sour milk from four cows, even charging them for their pasture and the old wood used in cooking their food. On the 15th of December he killed them and sold them in Lansingburgh for $7.50 per hundred weight. The aggregate weight was 4,241 pounds, averaging 424 pounds. The account stand as follows:

DR.	
To 10 pigs seven weeks old	$30 00
" 212½ bush. corn at 75c.	159 37
" 36 bush. oats at 45c.	16 20
" grinding	14 78
" 13 bush. small potatoes at 12½c.	1 63
" 6 loads pumpkins at $1.	6 00
" pasture	3 00
" wood	2 00
Total expenditure	$232 98
CR.	
By 4,241 lbs. pork at $7.50 per hundred	$318 07
Balance	$85 09

As you will see, they were only nine months and two days old. They were from the best breed of swine that he could procure in his neighborhood at that time, which was before the era of the large improved breeds. Mr. Hoag proclaimed at that time that whenever his weights were beaten, under like circumstances, he would try again, but he has waited long and has seen the snows of nearly 80 winters, yet he believes he still remains the champion of heavy weights, as he has seen no authenticated report to the contrary.

The Tide of Emigration.—It is an interesting sight to see Castle Garden—which is not a garden, but a great building—filled with new comers from all parts of the world. During the month of April, there were no less than 46,148 emigrants landed, this being the largest number that has ever come to our shore in the same space of time, and this does not include the many that come over in the cabins of the steamers, and go at once to their friends. The emigrants, as a whole, appear to be of the hard working class with but little capital, they mostly go

to the great west, where they will undoubtedly make a working force that will he welcome, and their zeal in seeking a new home appreciated.

Barn Weevils.—These are not, as some suppose, brought into the granary in the wheat. It is an insect that attacks the grain only after it is harvested. A new granary should be so constructed as to afford no crevices to harbor the insect, and the door and other openings should close so tightly at every point that the weevil can not enter, and whatever spaces are to be left open for ventilation must be covered with wire gauze, fine enough to exclude it. In France, the receptacles are often built of sheet-iron. In an old granary, known to be infested by weevils, there is but one safe course, which is to store the grain elsewhere for two years, at the end of which time the weevils will be starved out. "W. K. W.," Lancaster Co., Pa., writes us that in two cases within his knowledge the insects have been starved in this manner. If the wheat is threshed in the barn, care must be taken to leave no scattered grain, and straw is to be stored in the barn only in case it has been thoroughly threshed.

Values of Manures from Feeding Stuffs.—"W. G. L." Mr. Lawes, the famous English experimenter, has calculated the money values of the manures produced from different foods by assuming that certain percentages of nitrogen, phosphoric acid, and potash are consumed and lost, that the rest go into the manure, and that in the manure they have there about the same value, pound for pound, as similar ones in commercial fertilizers in which their value is pretty well settled. Below are Mr. Lawes' valuations of the manure from—

Cotton-seed meal, one ton	$27.86
Linseed cake, one ton	19 72
Beans, one ton	15.73
Wheat bran, one ton	14.59
Clover hay, one ton	9.64
Indian meal, one ton	6.63
Meadow hay, one ton	6.43
Oat straw, one ton	2.90
Potatoes, one ton	1.50
Turnips, one ton	.86

This matter has been much discussed. Dr. Vœlcker considers Mr. Lawes' valuations, in general, from thirty to forty per cent too high, and evidently on good grounds. Of course, the worth of the manure is modified by numerous circumstances. Growing or fattening cattle or milch cows will retain more of the nitrogen, phosphates, etc., from the food and leave less in the manure than store cattle. The waste before the manure gets on to the land varies in different methods of treatment. But nevertheless the figures give a fair idea of the relative values of the manure made from different fodder materials. For farmers in the older States, who buy commercial fertilizers, a deduction of one-third from Mr. Lawes' figures would probably be not far out of the way.

Coal Oil Barrels.—Suggestions as to the cleansing of these continue to come. "B. J. G.," Naples, Iowa, and "M. L.," Lansing, Pa., both advise long continued soaking in water, the idea being that the water enters the pores of the wood and gradually displaces the oil; the first advises sinking the barrel in a stream, the other to set it under the eaves and keep it filled with rain-water. "H. W.," Excelsior, Mo., suggests keeping the barrel full of rain-water, adding the wood-ashes as they are taken from the fire. Neither state how long it will take to remove all traces of oil, and all suggest putting the head that was removed edgewise in the barrel.

Water for a Bath House.—"E. S.," Orange, Tex., asks what would be the cheapest method of pumping and heating water for a bath house. If the water is to be raised from a well, a windmill would be the cheapest. The heating of the water will depend upon the quantity. If much is to be heated, it may be best done in a wooden tank, by means of steam driven into it. If a steam boiler must be put up for heating the water, then in such a case it may be better to have a steam pump to raise the water, and use the exhaust steam for heating.

Millet and Abortion.—"J. R. E.," Somerset, Kansas, writes that it is a general belief in his vicinity that common millet will cause abortion in mares: he has three mares in foal and no other hay, and would know if it is safe to feed it. We do not think it possible for millet to cause abortion directly. When it is cut too late, the bristles that grow near the seeds become dry and hard, and cases have been known in which these bristles had matted together and formed a large ball which ultimately caused death. Should this occur even in a small way in a brood mare, her general health would be affected, as it might be from a score of other causes, and abortion follow at a matter of course.

Raspberries and Blackberries.—W. C. Steele, La Porte, Ind., who has had much experience with both these fruits, prefers to keep the canes much shorter than is usual. He finds that 18 to 20 inches for Raspberries, and 24 to 30 for Blackberries is better than a greater hight. He claims that the bushes are not liable to be blown over, that he gets just as much fruit, and that it is easier to pick, especially if the pickers are children. The stopping should be done when the plants reach the hight named, by merely pinching out the young and tender growing point with the thumb and finger.

Boulders in Oregon.—"C. M. C.," Benton, Oregon. Geologists account for the appearance of such boulders by supposing that at some former period the earth in the locality was covered with ice, and that glaciers, or rivers of ice, were moving, carrying vast amounts of earth, stones, etc., as they are now known to do in the arctic regions and in the Alps. The fact that the stones your mention are very smooth, as if they were polished, gives support to this view of glacial action.

Locusts in West Va.—"W. C. S., Jr.," Volcano, W. Va., writes that this is the year of the appearance of their brood of 17-year Cicada, and that there is scarcely a foot of ground without a hole from which an insect has come out. He finds that the song of the Cicada becomes somewhat monotonous, and compares it to a "ringing in the ears." To our notion its sound is more like that of a threshing machine at work at a distance. We have seen it stated that after their long career in the soil, the insects cease to do mischief, and in the winged state are harmless. This is an error. The female lays her eggs in grooves cut in the small branches of trees; these are often so numerous as to cause the death of the twigs and branches, which, after a time, are broken off by the wind and fall to the ground. They seem to prefer the oaks to other trees, but will deposit their eggs on any others except those of the Pine Family. When they select fruit trees, much damage often results to the orchard.

(*Basket Items continued on page* 285.)

Reform in English Agriculture.

Mr. Caird, an authority on British farming, instead of grieving at American competition, advises the English farmer to make some radical changes in his system, and engage more extensively in the production of those commodities, that do not admit of either long storage, or carriage; such as those of the dairy, market garden, etc. He says in a letter to "The Times," (London):

"The introduction of foreign meat and cereals is of immense benefit to the consuming classes of Europe. American statesmen believe they are rapidly gaining control of this trade, and can maintain it even at lower prices. It must be met by the production here of articles which will not bear long storage or carriage, such as milk, fresh butter, early vegetables, meat, hay, straw, potatoes, and the sugar beet. Grass farms, dairying and market gardening—all the interests in land, whether of the owner, occupier, or laborer—must be disenthralled. The control of the dead hand must be removed. The sale and transfer of land must be simplified and cheapened. Encumbered and unwieldy estates will then be broken up and subdivided to form numerous small properties.

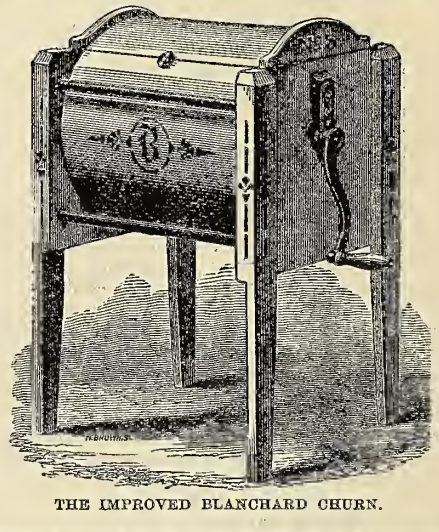
"The drain of agricultural labor and capital to the United States and Canada, which has already commenced and which nothing can prevent from continuing and increasing, will alter the existing conditions of agricultural property in England. Our agriculture must adapt itself to the change, freely accepting the good it brings, and skilfully using the advantages which greater proximity to the best market must always command."—This is a very clear and thoughtful statement of the whole trouble in English agriculture, with a way out of it, that the wise farmer must see is the proper one.

Good vs. Poor Hay. When to Cut Grass.

There are two radical defects in the ordinary practice of growing and harvesting grass and clover. The soil is poorly manured and poorly tilled, and the grass is allowed to get too ripe before it is cut. It is abundantly proved, by actual analyses, that grass grown on land in good condition, is not only larger in quantity, but better in quality, richer in albuminoids, the most valuable food-ingredients, than that grown on poor soil. As to the best time for cutting grass and clover, the experiments described by Prof. Atwater, under the head of "Hungarian Grass," in the present number, coincide with the best data from foreign sources, in implying that early in the time of blossom, or from a little before that to full blossom, is, on the whole, the best period for cutting grass and clover. The hay thus obtained is easily digestible, and has a good percentage of albuminoids. But as it grows older, the proportion of nitrogen decreases, and that of woody fibre grows larger, the hay becomes less digestible, the digested material is poorer because it lacks albuminoids, and finally the hay is not so palatable. For all these reasons, the late cut hay is worth far less for feeding. Timothy and clover grown on rich land, cut early, and well cured, make excellent fodder. Grown on poor soil, and cut late, they are pretty poor stuff. A great deal of the hay that lies in barns throughout the country, is little better in feeding value than good straw.

An Improvement in Churns—The Blanchard.

The churns in common use, operate in two principal methods. In one, the cream is beaten with something, and in the other, something, so to speak, is beaten with the cream. Of the first class are all the various dasher churns, in which agitation is produced by the alternate up and down motion, or the continuous or revolving motion, of a variously shaped piece known as the dasher. In the other set, the something beaten with the cream, is the sides or interior walls of the churn. The cream is dashed against the churn, by revolving a rectangular box, or by giving a similar box a reciprocating swashing motion on an axis, or in a tin cylinder, by means of an oscillating, or pendulum movement. The devices in both classes of churns, for effecting a simple object—the agitation of the cream, are most numerous and varied. The first named class—the dasher churn—is more generally used than any other, and no churn in this class has acquired a wider or higher reputation than the Blanchard. In this there is a revolving dasher, of



THE IMPROVED BLANCHARD CHURN.

such a form—though very simple, that it not only accomplishes the churning with great rapidity and completeness, but allows of the gathering and partial working of the butter before it is removed from the churn. The great claim made by the makers of the various oscillating or swashing churns, in favor of their method is, that the cream is all acted upon equally, and that no portions of it can escape agitation, and be less completely churned than the rest. The Blanchard churn, as originally made, was semi-cylindrical, with a flat top; the small portion of cream thrown against the under-side of the top at the beginning of the operation might, if left there, be imperfectly churned, and if this were mixed with the butter at the close of the operation, that might be streaked or specked. But only a careless dairy woman would leave the cream thus; no matter what kind of churn was in use, a stone-jar, or a Blanchard, a careful butter maker would make sure that the cream was all churned alike, and by scraping down occasionally the small portions that were thrown against the sides, top, etc.,

obviate any trouble from this source. Recognizing the fact that, in their churn as originally constructed, those who tried to do so, could allow a small portion of cream to escape churning, they have modified it so as to make the interior a complete cylinder. The improved Blanchard has a curved top instead of a flat one, and now appears as in the accompanying engraving. We never had the least difficulty in many years use of the churn in its former shape, but as the present form prevents all trouble from unchurned portions in the hands of any one, the change is an improvement. No alteration has been made in the other parts of the churn, and it does not appear that any improvement is possible in these, whether we regard their effective work, or the ease with which they may be taken apart and kept clean, both important features.

The Army Worm—Its Habits.

On the first day of June, Mr. J. N. Plumb, who has a farm at Islip, Long Island, called to say that his grain fields, and those of his neighbors, were being devastated by the Army Worm, and wished to know something of its history, and what remedies had been found useful elsewhere. Knowing that the name was applied to at least three other caterpillars, all of different habits, we requested specimens in order to be sure of the identity of the insect in question. The prompt arrival of specimens of the insect with those of the rye upon which it had been at work, at once settled the fact that *the* Army Worm was upon Long Island in force, and soon after accounts were given in the daily papers. A letter from Mr. J. M. Budd, dated June 4th, announced that the same insect had appeared in force "on the neck lands of Kent Co., Del.;" that some wheat crops were diminished by one half, and asked that we give an article for the future guidance of the farmers in that locality.

Fig. 1.—THE WORM, FULL GROWN.

The earliest recorded appearance of the Army Worm in the Eastern States was in 1743. Next, in 1770, it was present in great force in New Hampshire, and some other parts of New England. Their next serious raid was in 1817, in Eastern New York and Western New England. From that time until 1861 it was not troublesome; in 1875 it appeared in parts of New England and on Long Island, and now, after an unusually brief period, it again parades in the last named locality. During the years since 1861 it has appeared in destructive numbers in several of the Western States, notably in 1861, at which time it extended from New England to Kansas—and in 1875 it visited a large part of Missouri.

We can best serve our readers by giving a condensed description of the insect and its habits. The best history is to be found in Riley's Reports as Entomologist to the State of Missouri: the 2d (1870), the 8th (1876), and the 9th (1877)—that in the 8th being especially full. We may say, in passing, that while the State of Missouri, with a short-sightedness utterly at variance with her former intelligent liberality, has abolished the office of State Entomologist, the country at large is greatly indebted to her for the work already done by Prof. Riley, and his nine Reports contain the most useful information anywhere to be found upon the insects there treated of. The facts and the engravings here given are mainly derived from this excellent source.

Fig. 2. CHRYSALIS.

The Insect Described.

The full grown Worm is of the size shown in fig. 1, and has a general dingy black color; Riley describes its markings thus: "On the back a broad dusky stripe; then a narrow black line; then a narrow white line; then a yellowish stripe; then a narrow sub-obsolete white line; then a dusky stripe; then a narrow white line; then a yellowish stripe; then a sub-obsolete white line; belly, obscure green." The head is pale grayish yellow. When

Fig. 3.—THE MOTH, NATURAL SIZE.

full grown they suddenly disappear; they enter the earth, form a cavity a few inches below the surface and change to the chrysalis (fig. 2), "of a shining mahogany brown color, with two stiff converging thorns at the extremity, having two fine curled hooks at each side of them." In two or three weeks the changes are complete, and the perfect insect appears as a moth, given of the natural size in fig. 3. The general color of the moth is light-reddish brown or fawn color, this is sprinkled with minute blackish atoms or spots; there is a dusky line running inwardly from the tips of the front wings. Near the center of these wings, towards their upper margin, is a white spot, which allows the moth to be distinguished from others, and from which it derives its specific name, the insect being known to entomologists as *Leucania unipuncta*.

How Does it Pass the Winter?

Many, indeed the majority of moths are short-lived; depositing their eggs soon after they issue from the chrysalis, their career is completed and they die. With the moth of the Army Worm, Prof. Riley found the eggs very immature when it was some weeks old, and his observations lead to the conclusion that it does not deposit its eggs until the following spring, but in the fall finds some crevice in which to hide itself to pass the winter. The same naturalist thinks that some of the insects pass the winter in the ground in the chrysalis state, especially in northern localities. The moths, after their winter's rest, appear in the spring soon after vegetation starts, and deposit their eggs in April. The eggs are opaque, white, spherical, and $^{2}/_{100}$ inch in diameter; these are deposited in clusters of 5 to 20 upon the stems of grass, or rather along the base of the uppermost leaf of the grass stem, and glued in place. The eggs hatch in 8 or 10 days, and the minute, newly hatched insect is white. The caterpillar, during its early life, is greenish and not noticeable; it is only when it has changed its skin several times that it begins to show the characteristic markings that distinguish the full-grown worm.

What It Feeds Upon.

Such, in brief, is the history of the insect from the egg around to the egg again. Its natural food is the coarse wild grasses; among cultivated grasses they are most fond of timothy and blue-grass; clover they do not like; wheat they are especially fond of, more so than of rye, though they will eat that, as they will a variety of other plants when pushed. The preference of wheat for rye was manifested by the worm in Missouri. Since this was in type, Mr. Plumb has informed us that the preferences of the Long Island insect are exactly the reverse, and that it greatly prefers rye to wheat, which it will leave if rye is near by. Accounts from Delaware state that there wheat is the crop most injured. The insect will attack corn, but not potatoes or pumpkins. Hogs, chickens, and other poultry devour vast numbers of the worms, as do the wild birds and other animals. Hogs are said to have eaten so greedily of them as to die in consequence. Like most other insects, these have their insect enemies, both cannibals, which destroy the young larvæ, and those which themselves pass their larval state within the bodies of the larger caterpillar or Army Worm. Such parasites work unnoticed, save by the few naturalists who study their habits, but they render important service in keeping these and other destructive insects in check. In Army Worm years the worms are not noticed during their early life; and it is only when, after having destroyed the grass on the field where they were bred, they start out in search of food, that they become formidable. Their course in one direction, taken by all through some mysterious common impulse, is held with remarkable tenacity. If shallow water is met, the advance fall in until their dead bodies form a bridge for the living ones to cross.

Methods of Destroying the Worm.

Upon a road or upon a fairly level field large numbers of the worms can be killed by the use of a roller. Crude petroleum has been suggested, and we have no doubt that vast numbers might be killed by watering a strip, especially where they would cross a road, with this. The worms in crossing a belt of the petroleum would probably get sufficient upon their bodies to kill them. Another method is to poison a strip of grass in their path with London Purple or Paris Green, in the same manner as potatoes are dosed for the Potato-Bug. To save a field of grain from their attacks the most effective method is to make a trench by plowing, running two or three times in the furrow, with the straight side towards the field. When a large number of the worms are collected in the trench, straw may be strewn along it and set on fire; the heat not only kills the insects, but keeps the side of the trench dry and crumbly, and prevent them from climbing it. If a heavy rain should wash the side of the trench, it must be mended or a new one plowed. It has been suggested to dig pits or small wells in the bottom of the trench at intervals; the insects in going along the trench in search of a place to ascend the side, will fall into the pits and be trapped in large numbers; when the first set of these pits is nearly full, other pits are dug, throwing the earth into the first ones to kill the worms. It has also been suggested to feed the worms in the trench with freshly cut grass that has been thoroughly sprinkled with London Purple or Paris Green. It may be some satisfaction to those who have suffered from the visitation of the insect, to know that two successive Army Worm years have never been known in any one locality, and it is not thought that such can occur. They are with us more or less every year, but it is only when conditions favor an unusually abundant crop of them that they become troublesome. It has been observed that the worm usually appears in wet springs that have been preceded by one or more very dry years. As to the time of their appearing, that is, in destructive force, it is found in the different localities to correspond very closely with the period at which the wheat is in "the milk."

Experience with Barbed Fence.

C. L. Sanborn, Sup't. of "Sawyer's Ranch," Silver Lake, Kansas, writes to the *American Agriculturist:* "I have been very much interested in the various articles on 'Fences and Fencing,' and, as requested, will give you our experience with wire fence. Within the last year we have built eighteen miles of *wire* fence, using both plain and barbed wire. We have seven miles built of two-barbed, one plain wire, and board at top. This makes a very good fence, but we now think the board should be between the barbed wires. We have three miles of fence composed of four plain wires, one foot apart, the two middle ones being barbed *after* putting up. This fence we do not like, as the barbs slip on the wire, and stock will slip through. Another three miles is built of three-barbed wires, 16 inches apart. This makes a good fence for large stock, but for yearlings and calves the wires should be nearer together. The best fence we have is built of three steel-barbed wires, bottom one 18 inches from the ground, the others a foot apart. For posts we use wood—cedar, oak, black walnut and elm—which we set in the ground two feet, and 8 to 20 feet apart. Oak posts are liked best, as they hold the staples more firmly. We have used the 'Glidden' Steel Barbed, the 'Steel Barbed Cable' Fence, the 'Ohio Steel Barbed,' and 'Lyman Manu'fg Co. Barbed Fence,' and now give preference to the last named.—We never have had stock of any kind injured from running into the wires. In fact cattle will have nothing to do with a good steel barb.—Our fence costs from 50 cts. to $1 per rod. Posts cost 10 to 14 cts. each.—The fence we have built

encloses a stock farm or 'ranch' of 3,000 acres, and we consider steel-barbed wire fence, with oak or iron posts, the best fence for Kansas.—In putting up the fence, we run the wire off from the spools, from a wagon, stretching from a half to a mile at a time, with blocks and tackle. Corner posts should be well braced. The best plan is to bore two holes in the bottom of the post, and drive two-inch sticks through (as shown in the sketch, fig. 37). These posts, well put into the ground, and braced from the top wire, can not be pulled over."—[In fig. 38 we suggest a simple method of bracing corner or stretching posts which will frequently be convenient. At a distance of 4 to 6 feet drive a short stake of a length required by a loose or compact soil. From this extend a short wire, or a double one, to the post. Where there is much strain, this wire will need to be heavy, or it will break or stretch. If needed, a bracing wire may be put on each side, as shown in the engraving, fig. 38. These short stakes will not be in the way, as they will be directly under the running fence. The horizontal wires may

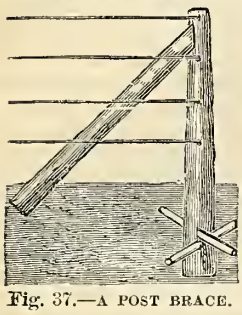


Fig. 37.—A POST BRACE.

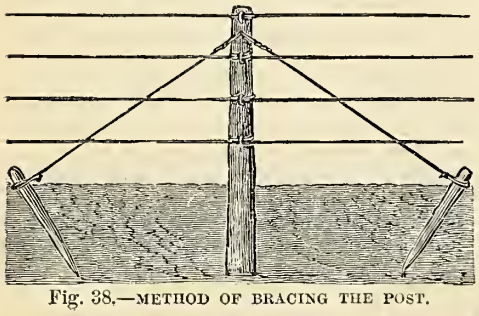


Fig. 38.—METHOD OF BRACING THE POST.

be given one turn around the post, and a staple driven to prevent slipping up or down, or they may be put through a hole bored in the post and securely fastened by driving in a spike or large nail. ED.]

R. A. Steele, of Douglas Co., Kansas, writes to the *American Agriculturist:* "I have been using barbed-wire for the past year; was previously prejudiced against it; have now over one mile—three wires, with posts one rod apart. It answers the purpose; that is, it turns stock. I had in pasture over 200 Colorado cattle, last year, 'stampeders,' and they broke the fence once only. Stone-wall is the fence for this region; costs $1.25 per rod, and turns hogs, etc. We consider barbed-wire fence, when properly constructed, safe, but not so cheap as stone.—My plan in putting up wire is: posts one rod apart, every tenth post to be well set, to strain the wire. Use a clamp around the wire attached to a lever; fasten to the first post, and roll out to the tenth post, apply the lever, and draw the first wire, which should be the lower one, the tightest (no team can equal this way); put the remaining ones on the same way, but not quite so tightly. It will not do to tack wire on to trees, unless you first nail on a strip or board, which will save the wire from rusting and breaking, as it would do in a few years. I have seen this tried, and it is no theory.—In a word, poorly constructed fences are the ones which usually cripple and maim stock. I would recommend the posts not over ten feet apart. Where timber is scarce, plant an osage orange between the posts, and let them grow to make a small tree, and when of sufficient size, saw off say five feet from the ground, nail on a strip to fasten the wire to, and you have a post which will last. This is the only use I would have for osage orange. I prefer the four-barbed rather short; the long ones cut severely. I have no interest in any particular wire, but have my preference, and my object in writing to you is, this wire fence is bound to be the rage, and for certain localities, will be the only fence, provided they can suspend it in the air; but for a large portion of Kansas, stone is so convenient that it is far cheaper; the only thing is time. With stone fence we can let hogs run, which is a great consideration. Six wires may turn hogs, but I doubt it—that is those that are quite small."

More About the Army Worm.

The appearance of the Army Worm in several eastern localities has caused no little excitement; the daily papers have had articles, some of them more or less sensational, and the inquiries made of us both in person and by letter show a general desire for information concerning this pest. A condensed history of the insect will be found on another page. After that article was in type we received from Mr. J. N. Plumb copious notes of his observations of the insect, and its habits, and a very full account of his battle with the "Army," in his attempts to save certain crops from destruction. "Deer Range" farm, Mr. Plumb's place near Islip, L. I., enjoys the distinction of having been the first locality on Long Island, visited by the worm—or at any rate, the first on which it was noticed. To publish Mr. Plumb's article entire would be to repeat much that is given in the article referred to; we only give points which are not already stated.

How they Move.

"The Army Worm is still working north and west, and seems to have no inclination to go east—the dividing line of their destructive work is so marked, and well defined, that at a distance of 10 feet to the east—without any barrier to prevent—not one worm can be found. In the potato field which lays along the 40 acres of rye, they have never gone east further than the tenth row.

"Their Favorite Food

seems to be rye, corn, red-top, and timothy, especially the two latter. It is the impression of my manager, Mr. Jarvis H. Smith, that they will attack and eat wheat if in the line of their march. They prefer rye and will leave the former for the latter if near by. Any kind of grass they will devour—if they can find any green and tender to feed on near by—but when everything else is consumed, they will go back on to the clover and make clean work of it.

Crops May be Saved.

"Directly north of the destroyed rye field, separated by an avenue two rods wide, is a field of 21 acres of corn now eight inches high. All our energies were directed to keeping them out of this field, and a large field of potatoes adjoining, as they were directly in their march to the north. It has been a hard week's fight, as all hands here know, but we have succeeded thus far in saving those two crops.

Attempts to Stop Them.

"We dug deep trenches, used Lime, Salt, Paris Green, Tar, set fire to the grass, and where there was no grass, carted hay, etc., and set fire to it in windrows, and with a large staff of men could not head them off; nothing would stop them. They had got the start of us, were headed west and bound to go west, and when the ground was hot and scorched after burning the grass, they marched right along over their dead and dying comrades that went before, stopping for nothing. My son set fire to the grass when they were crossing and they marched fearlessly right up to the very edge of the burning grass, never turned back, but as they shrivelled, others walked over them and while the ground was hot and smoking on they came.

Success in Poisoning.

"As for trenches or deep furrows we found them of no protection of themselves. But we finally conceived the idea (after burning hay, sprinkling lime and tar in these trenches without avail) to put in these trenches, their favorite food for them to eat—viz. red-top grass. This grass we wet with a mixture of Paris Green, the same that we use for potato bugs. And as long as the grass remains green and fresh they will remain quietly in the trench and feed on it and it kills them by millions, but as soon as the grass gets dry they stop eating it and then go out of the ditch if they can. (London Purple has the same effect as Paris Green). From this time forth we shall adopt this plan as the most effective; killing more and with less labor.

When they Feed.

"Our experience is—and we have studied their movements very closely—that their principal feeding time is from 11 A.M. until sundown. At 3 P.M. they seem to be more numerous than any other hour of the day. Early in the morning scarcely any are to be seen; they are then in companies of 25 to 50 secreted in the sods, tufts of grass, roots, clumps, or wherever they can get protection or shelter. As soon as the sun comes out warm they begin to move, the companies form in line and the march goes on. They never fail in discipline, never encroach upon the rights of each other—and in feeding are careful not to crowd each other and never contend for the same blade of grass. It is rare to find more than one on a stalk of grain. We are satisfied they do not feed or travel much at night as I went out at 1 o'clock A.M. with a large reflecting lantern, and after a careful inspection found but few on the stalks of grain. They were on the ground and did not seem to be feeding any, and but few were travelling." A day or two later Mr. Plumb sent us another report from the "seat of war," from which we extract the following concerning the

The Use of Trenches.

"In reference to trenches, ditches, or deep furrows to head them off, I would say that a ditch or trench is of no avail if after it is made it is left to itself. It must be constantly watched by men or boys, walking up and down along the trench, and sweeping back the worms as they crawl out, but the plan you sent me we found the best of all the methods we tried (and we have tried everything that ingenuity and energy could devise) and that was to dig pits every rod or so in the bottom of the trench. In this way we have caught and destroyed untold millions. The worms in their determination to go north approach the trench and go or fall into it. Then they attempt to go out on the opposite side—finding it not easy they, after several efforts, work along the trench in the endeavor to find an opening, and in doing so fall into the pits arranged along the bottom of the trench and which we dug about 2 feet deep and a foot or more square, with straight, clean shaved sides. In this way we have in a few hours time reduced the rank and file of the Army Worm in fearful numbers, and is *the only plan* I have any confidence in. Plowing a furrow is of no avail or use whatever in checking the progress of the Army, if, after plowing, a spade is not used to deepen and throw out the loose dirt at the bottom and sides; but on a big farm this is costly work."

Science Applied to Farming—LVIII.

Hungarian Grass and Hay.

I have received inquiries from a number of States, concerning the composition and nutritive value of Hungarian Grass. Some analyses and comments bearing upon the question, were published in the "Report of Work of the Middletown, Conn., Experiment Station, 1877-8," but as the circulation of this was limited, an outline of the results may be in place here. The samples analyzed were from Arawana Farm, Middletown, and kindly furnished by its proprietor, Dr. J. W. Alsop, with the following descriptions.

SOIL.—Low land, gravelly loam, stony, clay subsoil, wet in spring. Had been unbroken pasture for at least twenty years, until fall of 1874, when it was under-drained three feet deep, (drains forty feet apart), and plowed. In 1875 had roots in drills, with a liberal supply of barn-yard manure.

CROP.—In first week of June, 1876, sowed to Hungarian grass, applying the Stockbridge formula for Hungarian for one ton. Crop cut July 17, 1876. Yield about 3,300 lbs. of Hungarian hay per acre.

SUBSEQUENT TREATMENT AND YIELD.—Pastured until Aug. 18, 1876, then plowed and seeded with herd's grass, red-top, and clover, with dressing of 200 lbs. of blood guano per acre. In 1877 cut from the three acres, three roods, and twenty-seven rods, nine loads of hay, averaging fully one ton per load, and two loads of clover rowen. In 1878 cut eleven loads of hay and three loads of rowen. The samples for analysis were taken from plots of 49 to 87½ square feet area, as follows:

No. I. Cut July 17, 1876. Heads partly filled; seeds little developed; stalks averaged about twenty inches long.

No. II. Cut Aug. 3d. Heads well developed and well-filled with seeds; seeds soft; hay rather

yellow; stalks averaged about twenty-six inches long.

No. III. Cut Aug. 18th. Nearly ripe. Heads well-filled, seeds falling out; hay coarse and yellow like straw; stalks some thirty inches long.

The yields per acre of the freshly-cut grass, cured hay, and dry (water-free) substance, as calculated from the yield on the small plots, which of course do not represent what would be the produce per acre, were as follows:

No.	Green Fodder.	Cured Hay.	Dry Substance.
I.	July 17, 1876....20,740	July 29, 1876....5,876	4,509
II.	Aug. 3, " 16,891	Aug. 12, " 6,111	4,773
III.	Aug. 18, " 10,454	Aug. 25, " 4,014	3,121

The percentages of water in the freshly-cut grass, were: I, 78.3; II, 71.7; III, 70.2; in the freshly-cured hay: I, 23.2; II, 21.9; III, 22.3. On standing, they dried down still more. The crop on the whole field, 3,300 lbs. per acre, cut July 17th, would be, per figures of I, assuming 75 per cent of water in the grass, and 23 per cent in the freshly-cured hay:

Green Weight, @ 75 per cent Water.	Cured Hay, @ 23 per cent Water.	Dry Substance.
10,164 lbs.	3,300 lbs.	2,541 lbs.

The Composition of Hungarian Grass & Hay.

Analyses of the samples at our laboratory gave results as in the table below, in which I add German analyses by Moser and Metzdorf.

HUNGARIAN GRASS AND HAY.	Water.	Ash.	Albuminoids.	Woody Fibre.	Carbohydrates.	Fat.
GRASS,—GREEN FODDER.						
Dr. Alsop's.						
Cut. Hight. Development.	*p.ct*	*p.ct*	*p.ct*	*p.ct*	*p.ct*	*p.ct*
I. July 17, 18-26 in., In blossom...	75.0	2.2	3.2	8.7	10.4	0.6
II. Aug. 3, 24-34 in., Out of blos'm	70.0	1.5	2.9	9.9	15.0	0.6
III. Aug. 18, 32-40 in., Nearly ripe...	70.0	1.9	2.1	10.4	15.0	0.6
German (later sown.)						
July 8, 3- 4 in....	80.6	2.5	4.9	4.6	7.10	
July 21, 8-10 in....	78.7	2.5	5.3	5.5	8.06	
Aug. 10, 15-16 in....	69.9	2.4	5.9	9.4	12.5	
Aug. 24, 18-24 in.. In blossom....	65.6	2.3	5.9	11.3	15.0	
Sept. 7, ... After blos'm.	62.9	2.4	5.8	11.5	17.4	
HAY.						
Dr. Alsop's						
I. July 17, In blossom....	16.7	7.2	10.7	28.9	34.5	2.0
II. Aug. 3, After blossom...	16.7	4.3	8.0	27.6	41.7	1.7
III. Aug. 18, Nearly ripe....	16.7	5.3	5.7	29.9	41.7	1.6
German (later sown.)						
Aug. 10....	....	....	....	....	....	....
Aug. 24, In blossom....	12.5	5.8	14.9	28.5	38.0	
Sept. 7, After blossom	12.5	5.5	13.6	27.3	41.1	

Calculated in the manner described in the *American Agriculturist* for last December, page 497, and January, page 9, the digestibility and feeding values of Dr. Alsop's Hungarian compare with European products, and with similar ones as analyzed in this country, are given below as follows:

Feeding values of Hungarian and other Hays.

HUNGARIAN AND OTHER GRASSES AND HAYS. A., Dr. Alsop's. M., Other samples analyzed at Middletown. W., German from Wolff's Tables.	DIGESTIBLE NUTRIENTS. Albuminoids.	Carbohydrates.	Fats.	Nutritive Ratio.	MONEY VALUE. Dollars per 100 pounds.	Comparison with medium Hay=100.
GREEN FODDER.	*p.ct*	*p.ct*	*p.ct*	1:	$	
Hungarian Grass, in bloss'm, W	1.8	11.8	0.3	7.0	0.19	0.30
Hungarian Grass, in bloss'm, A	1.8	11.5	0.2	6.7	0.19	0.30
Hungarian Grass, nearly out of blossom, A....	1.2	11.0	0.2	9.4	0.16	0.25
Timothy Grass, in blossom, W..	2.1	16.0	0.5	8.2	0.28	0.42
Clover Grass, in blossom, W....	1.7	8.7	0.4	5.7	0.17	0.26
Rich Pasture Grass, W.....	3.4	10.9	0.6	3.6	0.27	0.42
Fodder Corn, So. White—young.	0.9	7.6	0.1	9.2	0.11	0.17
HAY.						
Hungarian Hay, in blossom, W.	6.1	41.0	0.9	7.1	0.67	1.03
Hungarian Hay, in blossom, A..	6.0	38.3	0.8	6.7	0.64	1.00
Hungarian Hay, nearly out of blossom, A.....	4.0	36.7	0.5	9.4	0.52	0.81
Hungarian Hay, nearly ripe, A..	2.8	37.5	0.5	14.0	0.48	0.75
Timothy Hay, medium, W.....	5.8	43.4	1.4	8.1	0.69	1.09
Timothy Hay, just head'd out, M	4.4	43.6	0.8	10.4	0.62	0.97
Timothy in full blossom, M.....	3.1	39.9	0.5	13.2	0.52	0.81
Meadow Hay, average, W.....	5.4	41.0	1.0	8.0	0.64	1.00
Clover Hay, average, W.....	7.0	38.1	1.2	5.9	0.69	1.08
Clover Hay, just bef. blos'm, M.	6.7	38.8	0.8	6.1	0.67	1.05

It appears that Dr. Alsop's Hungarian grass cut in blossom agrees exactly with Wolff's average for German, both being reckoned on basis of 75 per cent of water. Dr. Alsop's hay in the table falls a trifle below the German. This is because it is reckoned on basis of 16.7 per cent, one-sixth, of water, whereas Wolff assumes only 13.4 per cent. Like other grasses, the Hungarian as it grows older has less albuminoids and more woody fibre. At the same time, it becomes less digestible. The Hungarian hay, No. II, is worth about one-fourth less, pound for pound, according to the calculation, than No. I.

The youngest hay, with one pound of digestible albuminoids to 6.7 lbs. of carbohydrates is a good fodder, but the old hay, No. III., which has only one pound albuminoids to 14 of carbohydrates, is poor; it lacks material to make flesh, fat, and milk. Dr. Alsop's Hungarian hay, cut in blossom, is just about equal to the average German meadow hay (English grasses), which is equivalent to saying it is decidedly better than average upland hay with us, as may be seen from the analyses of American hays, (M. M.) in the table. Our hay suffers in comparison with theirs, because we do not manure or till our land so well, and often cut our grass late. For these reasons much of the hay cut on our old meadows is little better than good straw.

Dr. Alsop's crop of Hungarian was not large. Cut early in blossom, the yield on the whole field fell short of two tons of hay per acre. But it made excellent fodder, and the land was in good condition, so that in the two succeeding seasons, it brought six tons of good hay and rowen, and promises to continue to do well for some time to come. Let us now consider the matter of

Hungarian in General.

Those who know the most about Hungarian grass, ascribe to it two chief peculiarities, deep rooting and rapid growth. Being a deep feeder it stands drouth, and often brings very large crops in soils and seasons where other grasses would fail. It requires, however, a rather loose soil with not too compact sub-soil, doing best on sandy loams and the like. Humus and lime are said to be favorable to its growth. The soil should be deeply plowed and well tilled. On account of its deep feeding Hungarian is said to exhaust the upper layers of the soil less than other grasses. It does particularly well on newly broken land or after a hoed crop like corn, potatoes, or roots. Being a rapid grower, fresh dung is said not to be so good for it as well rotted manure or concentrated fertilizers. It wants a good supply of available food in the soil. It may be sown at any time from May to August, its rapid growth permitting it to be cut early and cleared away for a fall crop, or sown late to piece out the scanty fodder of a dry summer or fall. Cattle are said not to relish it so well when cut too young. At the same time if it stands too long it becomes coarse, strawy, and indigestible. I have no data at hand to show how large crops are generally obtained with us. European figures put the yield at from 2 to 3½ tons per acre. Those who have used Hungarian Grass, speak very highly of its qualities for feeding.

W. O. ATWATER.

The Onion Fly (*Anthomyia Ceparum*).

The onion growers are again complaining of serious trouble from a fly, not a new comer, which lays its eggs upon the leaves of the onion. The eggs

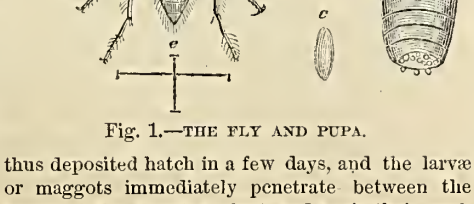


Fig. 1.—THE FLY AND PUPA.

thus deposited hatch in a few days, and the larvæ or maggots immediately penetrate between the leaves of the growing plant, and begin their work of feeding and reducing the interior of the onion to a worm-eaten and worthless state. The maggots remain in the onion about two weeks, when they change into the pupa or dormant state, from which they emerge after 15 or 20 days as the perfect fly, prepared to deposit eggs upon other onion plants, and thus continue the destructive work. The perfect fly, which is about half the size of the common house fly, is shown in figure 1, *e*, somewhat magnified; *c* shows the pupa of natural size, and *d* the same enlarged. The larva of this insect is shown of its natural size, *a*, and magnified at *b*, in figure 2. The insect is difficult to destroy. The use of salt, ashes, and other substances, strewn upon the soil, seem to do very little good. When a plant is once affected by the maggot, it should be pulled up and burned. The presence of the destroyer is early known by the leaves of the plant turning yellow and falling upon the ground. Onions on new soil are less liable to attacks than those on old onion ground. All affected plants should be destroyed, whether few or many, as it is only by this method that the increase of the insect may be checked.

Fig. 2.
THE "WORM."

A Country House, Costing $3,500.

BY S. B. REED, ARCHITECT.

The designs here given, represent a substantial and roomy dwelling, suitable to the wants of well-to-do farmers, and others residing in the country.

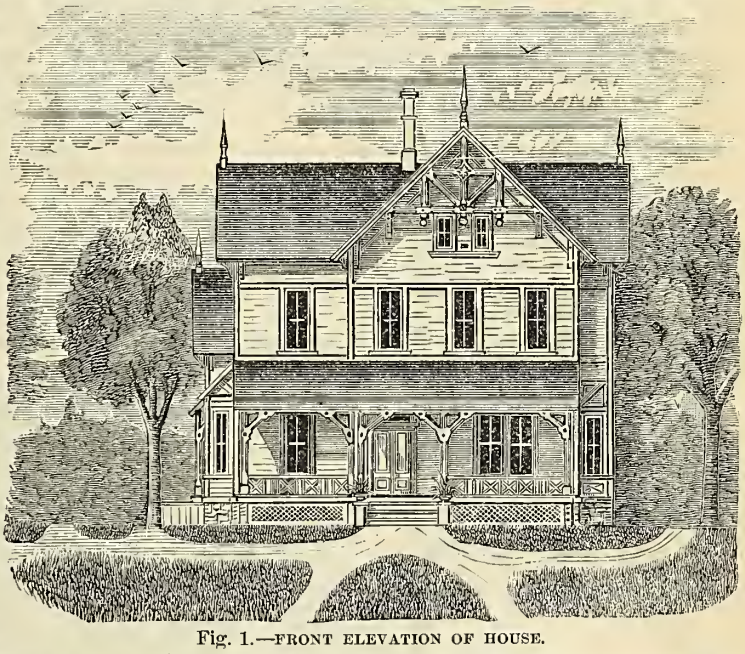


Fig. 1.—FRONT ELEVATION OF HOUSE.

Exterior.—(figs. 1 and 2, see following page). The outlines are irregular and proportionate. Each face has sufficient diversity in projections, and details to give an animated and picturesque appearance. The roofs and gables are treated in a simple manner, to accord with good taste and rural surroundings.....The **Front,** (fig. 1), has a breadth of 35 feet, across which extends a shady veranda, covering the main entrance, and the front parlor window; there is also a pleasant balcony, covering the front sitting room window. The side, (fig. 2), has an extreme depth of 63 feet. A porch protects the entrance to the kitchen from this side. The rear entrance to the main house is on the opposite side of the house.....**Cellar** (fig. 3). Hight, 6½ feet. This story includes the entire space below the main house, giving plenty of cellar room for all usual requirements. The outside entrance is from the rear, and a stairway leads to the kitchen.. .

First Story (fig. 4).—Hight of ceiling, 10 feet. The principal entrance is from the veranda through double front, and vestibule doors, to the main hall. This hall communicates with each of the principal rooms on this floor of the main house. The parlor doors are double, and directly opposite

to them is a sash door opening to the balcony. At the rear end of the hall is an entry through which the rear stoop is reached. The Parlor and Library adjoin each other through sliding doors, and may be used as one room as occasion may require; each is well lighted, and are sufficiently separated from the living rooms to prevent annoyance in them from the machinery of general house-work. The Sitting-room is a cheerful apartment, with an open fireplace suited to a grate on the hall side, and a large bay window opposite. A front window is arranged with a swinging panel below the sash opening to the floor, and leading to the balcony; opposite to it is a door leading to the dining-room. The Dining-room is octagonally shaped and of good dimensions. It has a large bay window with four full sized sashes extending upward to the ceiling, and containing upper ventilating sashes with stained glass, as can be better seen in elevation, figure 2. This window is a pleasant feature, and with the addition of a double row of brackets, and potted flowers, may be made to serve acceptably as a substitute for a conservatory. Direct communication is arranged from this room with the kitchen, pantry, china closet, and the rear entry. The Kitchen is conveniently arranged with a large open fireplace suited to a range, four windows give ample light from three of its sides; it has doors leading to the dining-room, pantry, closet, outside porch, and to the private stairs leading to the second story. A pump, sink, and three wash-tubs are set at the sides of the fireplace. The Pantry is thoroughly shelved, and one side dresser-finished with sash doors above and drawers below. The Cellar Stair-way is situated under the private stairs, and is made to open from the pantry....

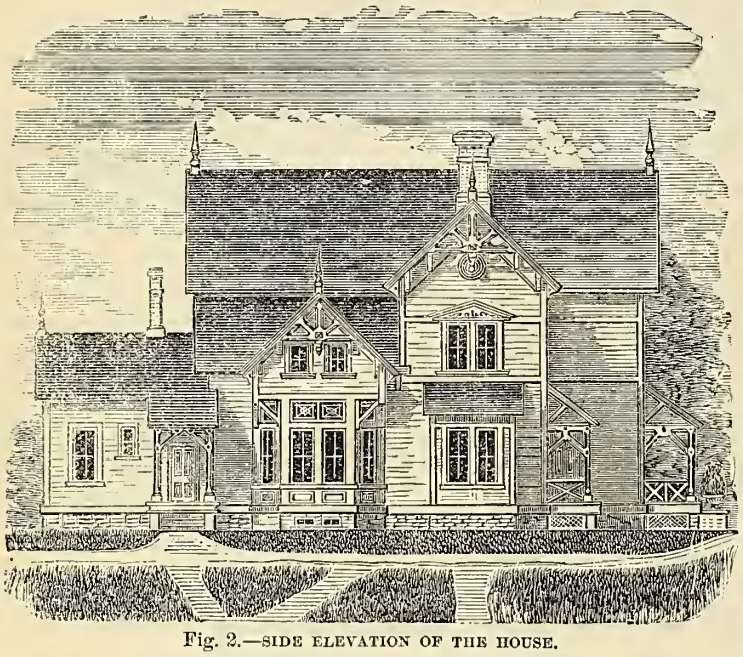


Fig. 2.—SIDE ELEVATION OF THE HOUSE.

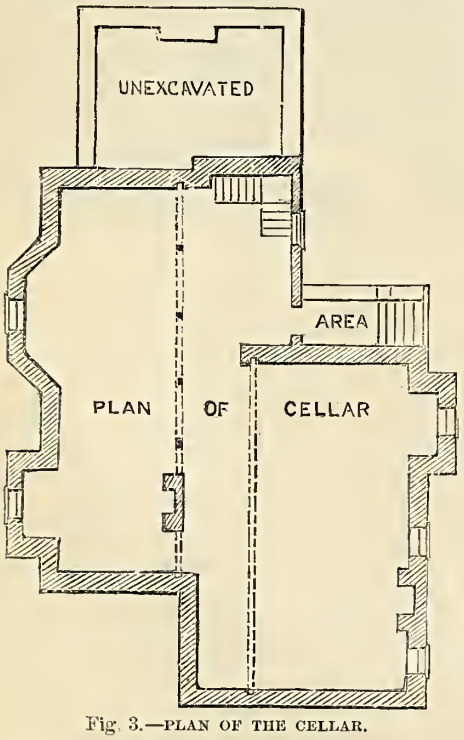


Fig. 3.—PLAN OF THE CELLAR.

Second Story (fig. 5).—Hight of ceiling, 9 feet in the main house, and 4 to 8 feet in the rear section. The hall is central, and convenient to the principal chambers, front bed-room, and connects with the rear passage. Each of the principal chambers is large, and has window openings on two of its sides. The rear passage is lighted from a dormer window, and through a sash door this light is transmitted to the main hall. The passage leads to two chambers, a store room, and by the private stairs to the kitchen. All communication between the rear section and the main house in this story, may be cut off by closing the sash door at the end of the main hall.... **Attic.**—Space for storage, etc., is made under the roof of the main house. It is floored, and has windows in the gables, but otherwise unfinished. The stairs are placed above the main flight, boxed in, and have a door at the foot. .... **Construction.**—The Foundations are of broken stone and mortar, 1½ foot thick, except where reduced for the stair-way, and are finished to show 2½ feet above the earth grades. For the unexcavated part they extend in the ground below the reach of frost, and have openings in them sufficient to insure ventilation beneath the kitchen floor. The area steps, and coping, and the sills for the cellar windows are of blue stone. The cellar windows are made to swing inside and upwards, and are held open as required by being hooked to the beams above. The Chimneys are of hard brick and mortar, with tops laid in cement. The main frame is of sawed timber thoroughly framed. The inclosing is of double boarding—first with 10-inch sheathing of even thickness, then with 6-inch clear pine clapboards. The roofing is of the best quality of 18-inch pine shingles, and for the principal parts are laid on spruce lath. The valleys, gutters, and leaders are of IX charcoal tin. The inside flooring is of 8-inch spruce, outside of 4½-inch pine. Plastering, hard-finish on two coats of best brown mortar, and seasoned lath, with neat stucco cornices are put in the principal rooms. The principal finish in the gables and verandas, is of timber neatly stop-chamfered, and fitted together. The rafters of the latter are left exposed to sight, with the roof-planking laid face down and beaded, complete for painting. Lattice panels are put under the veranda floors, as shown in fig. 1. The sash and doors are all of "stock sizes," 1½ inch thick, glazed with second quality of sheet glass, and in the two main stories are hung to weights with best cord. All windows in the first story of the main house have panels under them. The doors are of first quality pine, panelled and molded. A force pump is placed at the end of the kitchen sink to throw water into a tank placed under the kitchen roof, and from thence pipes carry water to the sink, and wash tubs.—Painting is two coats of best materials in shades to suit. The following **Estimate** is made at the uniform standard of prices given in previous months, and though differing somewhat from "prices current," will greatly aid in making calculations, especially as to the quantities of materials to use:

225 yards Excavation, at 25c. per yard	$ 56 25
75 perches Stone-work (complete), at $2.75 per perch	206 25
6,000 Brick in Chimneys (complete) at $12 per M.	72 00
60 feet Stone, (Sills, Steps, etc.) at 12c per foot	7 20
900 yards Plastering (complete), at 25c. per yard	225 00
330 feet Stucco Cornices and Centres (complete) at 25c. per foot	82 50
7,500 feet Timber, at $15.00 per M.	112 50
200 Joist, 15c. each, $30; 400 Wall Strips, 12c. each, $48	78 00
500 Shingling Lath, at 6c. each	30 00
90 bunches Shingles, at $1.25 per bunch	112 50
Cornice Materials	80 00

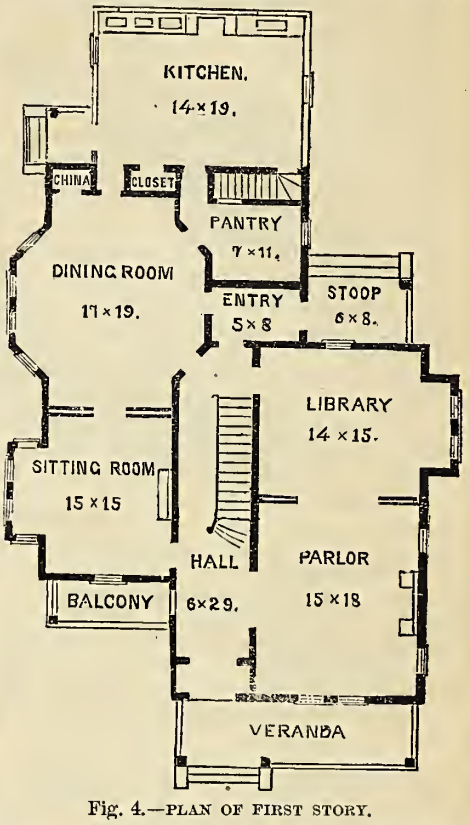


Fig. 4.—PLAN OF FIRST STORY.

400 ft. Ties, Valleys, Gutters and Leaders, at 8c. per ft	32 00
380 Sheathing, (10), at 25c. each	95 00
775 Clap-boards (6), at 12c. each	93 00
160 Flooring (outside), (4½), at 25c. each	40 00
500 Flooring (inside), (8), at 28c. each	140 00
6 Windows, cellar, (complete), at $3 each	18 00
38 Windows, plain, (complete), at $8 each	304 00
38 Doors (complete), at $8 each	304 00
Verandas and Porches (complete)	50 00
Stairs (complete), $40; Mantels (complete), $100	140 00
Closets (complete) $20; Plumbing (do.), $150	170 00

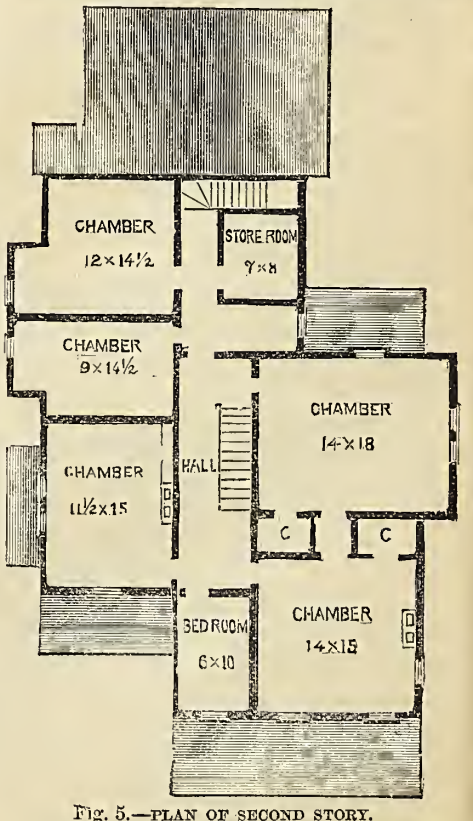


Fig. 5.—PLAN OF SECOND STORY.

8 kegs Nails, $24.00; Carting, $30.00	54 00
Carpenter's labor not included above	850 00
Painting (complete) $220; Incidentals, $427.80	647 80
Total	$3,500 00

The Iceland Sheep.

Sheep do not make any exception to the general rule of the great variation of animals under domestication. They are to a large extent creatures of circumstance, and by degrees, sometimes slowly, and at other times rapidly, they change their outward form, and mental characteristics, to suit the conditions under which they are placed. We would not expect that the sheep of the cold and frozen region of Iceland to be the same as those which have adapted themselves to our warmer and richer pastures. In the accompanying engraving a native Iceland sheep is presented, and it will be seen to be different in many respects from those we grow for profit. The accounts of these sheep, given us by travellers, and Icelanders who have moved to this country, are interesting in showing the widely different circumstances under which they live. They are rarely sheltered from the severities of the climate at any season, and little or no systematic provision is made for feeding them in winter. They find shelter as best they can, behind jutting rocks, and in narrow caverns in the mountains. When overtaken by storms, they are often so blinded by the drifting snow, that whole herds in their wild haste to reach some shelter, rush over steep cliffs and precipices, and are killed. When they find themselves surrounded by the storm, or are "lost," as we might say, the frightened sheep turn their heads towards each other and huddle together as closely as possible, so that by the united heat of their bodies, they may be able to out-last the cold of the storm.

A SPECIMEN OF NATIVE ICELAND SHEEP.

One writer says; "Those in the center relieve in turn, those who in the outer part of the circle, are exposed to the greater severity of the blast; thus necessity sharpens the inventions of beasts as well as of men." "The only kindness which these animals receive from their keepers in the winter, is being fed on fish bones or frozen offal, when their natural food is buried too deep even for their ingenuity and patience to reach." It can be seen that these sheep have a hard life to lead; and the care and attention which they get from their owners, is in no sense commensurate with that which they give in return. It would be natural to expect that animals thus exposed to storm and cold, would be protected with a pretty good coat of their own make, and such is the case. It consists of long coarse hair, which extends a number of inches above the dense covering of close wool upon the body. The fleece is thus made up of two quite distinct materials; and on this account, though it may furnish the best protection for the sheep, is not of first quality for the weaver. The difficulty of separating the two kinds of wool, is a serious objection to the more general keeping of this hardy sheep. They cannot hope to compete with our greatly improved breeds, and if introduced at all, it should be only as a matter of curiosity. This fact is given as an answer to a direct question; it coming from an Icelandic settlement, the people of which were inclined to import and grow their native sheep. One of the leading peculiarities of the Iceland sheep, is the number of their horns, they usually having more than two, and sometimes eight. The one in the portrait has three, two of them much after the ordinary kind in position and general shape, while the third is back and between them, and rising to one side. The supernumerary horns seem to follow no rule either as to numbers, or position upon the skull. When there are more than five horns they are placed in two rows. The use of this extra number of these curious outgrows from the head is not clear to see; they certainly do not appear to be very ornamental.

Peetsi, or the Zebra of the Plains.

The history of the horse, that greatest helper to man among the animals, is lost in antiquity. The breeds and varieties that have been produced, through the many ages that this animal has been bred, are almost endless. Whatever may have been the origin of the horse, and whatever the country from which he has become spread over almost the entire world, there are certain animals that are his near relatives, and still in the wild or natural state. The horse, the ass, the quagga, and the zebra, are, in fact, so much alike in their important characters that naturalists believe they all came from the same ancestral stock. Buffon, one of the most noted naturalists of his day, went so far as to state that the quagga was a hybrid between the horse and the ass, and therefore of very near kin to the somewhat celebrated light-heeled domestic beast, the mule; a view that naturalists of the present day do not accept. The true zebra is a native of the mountainous regions of South Africa, and differs from the horse in several points; its tail is furnished with long hairs only towards the tip—a point which shows its nearer kinship to the ass than the horse. The hind legs of the zebra are without warts; the neck is much curved, the mane short and standing erect. The head, neck, body, and legs, are all striped with black bands upon a background of dirty colored white, or white slightly tinged with yellow. It is considerably smaller than the average horse, being about 12 hands in hight. Besides the zebra of the mountains (*Asinus Zebra*), there is another found on the plains north of the Orange River, which is regarded as a distinct species. *Asinus Burchelli* of the naturalists, the Peetsi of the natives, the "Dauw" of the Boers, and the Zebra of the Plains, of the English. This, which is the animal shown in the engraving, has a more comely figure than the zebra proper, and its ears and tail are more like those of the horse, its tail being furnished with hairs much nearer the root than is that of either the zebra or quagga. Especially in its voice, which is a shrill and sharp neigh, with nothing like the bray of the ass, its closer relationship to the horse is shown. Like the zebra and other related animals, it lives in herds, which, when attacked, form a compact circle with their heads towards the center, and their organs of defence, their heels, presented to the enemy; these they are said to use with such effect, and deal out kicks with such force and frequency, that they are able to repel even the quick and ferocious leopard.

THE "PEETSI" OR ZEBRA OF THE PLAINS.

A Kansas Corn House.

We are indebted to W. S. Wadsworth, of Franklin Co., Kansas, for sketches and a description of one of those large corn houses now quite frequently found in the great corn-growing West. Figure 1 shows a side view of the crib, with the end or front in side section. The crib is 112 feet long, by 28 feet wide, and has a capacity of many thousand bushels (18,000). The method of storing away corn in a large house like this, is an interesting feature. It is done by horse power, which operates a large belt elevator. On the right of the entrance or floor, of the house, the elevator is seen running from *A* to *B*. This is a strong endless belt of leather, which passes over a pulley above and below, and has a series of "buckets" attached to its outer surface. The "buckets" or cups are about two feet apart. The pulley *A*, is connected with one above the letter *D*, and this is turned by a tarred rope, which connects it with the large wooden wheel, 5 feet in diameter, at the top of the turn-post, to which the horse is attached. Thus by a proper construction of the pulleys, a sufficiently rapid motion of the elevator-belt is obtained from the ordinary gait of the horse on the "power." The corn is fed to the elevator-cups through a hopper below the floor; shown only in cross section in fig. 1. The wagon is driven in upon the floor, which is provided with a "Dump." A trap-door, 2½ by 3 feet is opened at the rear of the loaded wagon, at the same time the floor is so arranged, that the whole wagon tips back, as shown in side view in figure 2, and the end board of the wagon box being removed, the corn slides into the large hopper below. It is not necessary to have the whole floor arranged to tip, but simply two narrow sills upon which the wheels must be placed. Mr. W.'s floor is so arranged, and this leaves the central portion of the floor stationary, except the trap-door and movable sills. The corn, after it is carried from the hopper at *B*, to the top of the pulley *A*, where the cups are inverted, is thrown upon a long smooth horizontal belt, which is run by a cord connecting *A*, with the belt pulley at *F*, a short distance below it. This horizontal belt runs the whole length of the storing portion of the house, and just below the ridge-pole, as may be seen in fig. 1, a portion of the roof being omitted for the purpose of showing it. This belt may be shortened at any time when the rear of the house becomes filled. A simple sliding "shoot" is used at the further end of the belt, for the purpose of turning the corn to one side or the other of the house, thus making the distribution of the grain an easy matter. Figure 3 shows a cross section of the storing room, and gives an idea of the way the sides of the house are braced, by means of ordinary boards, nailed to the sides of the beams which run from the ground to the roof. "The crib stands on posts cut 26 inches long, and set in the ground about one foot, and the ground is so raised that no water will run under the same."

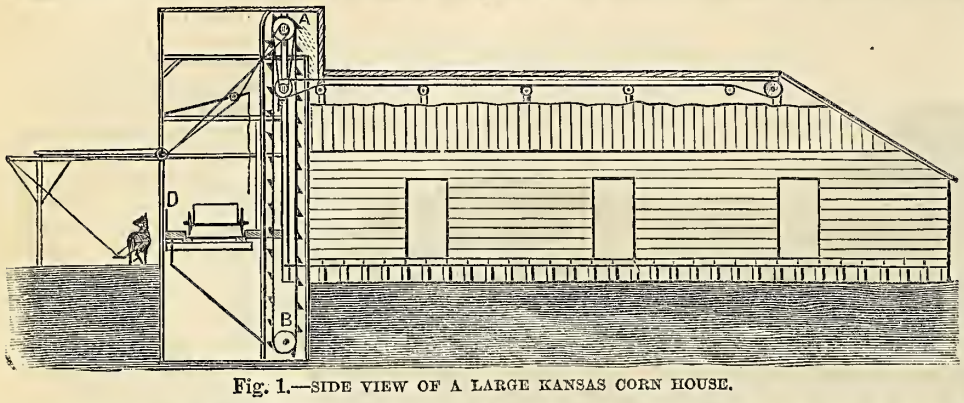


Fig. 1.—SIDE VIEW OF A LARGE KANSAS CORN HOUSE.

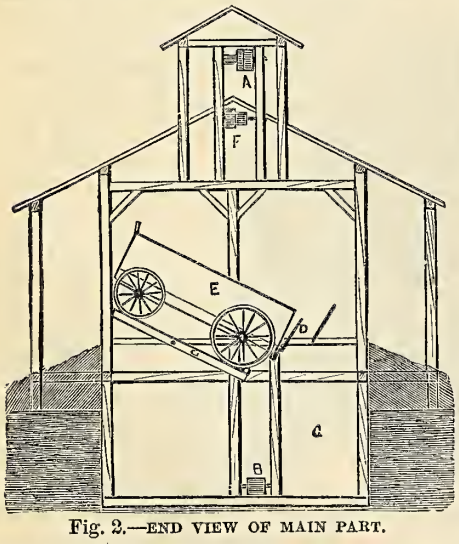


Fig. 2.—END VIEW OF MAIN PART.

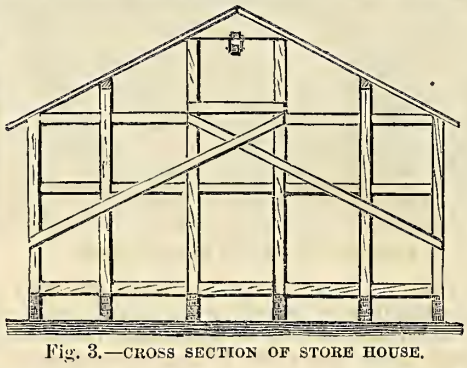


Fig. 3.—CROSS SECTION OF STORE HOUSE.

Among the Farmers.—No. 54.

BY ONE OF THEM.

It is not very long ago that our agricultural papers were printing with quotation marks, and clearly expressed "credit,"—as if the authors should be held responsible for their own Munchausenisms—tales of how Chinese and Egyptian poultry raisers hatched chickens in ovens, or heated rooms, or even in manure heaps. Their readers accepted the tales with grains of allowance, supposing that some truth must lie at the bottom. The times have changed. Now,

Artificial Incubation

is established as an economical system, and before long—I hazard the prediction—more eggs will be hatched by kerosene than under hens. Perhaps I live in rather an incubative neighborhood, but in all probability, we are neither more progressive, nor more experimentally inclined, than many others. There is indeed one monster establishment, which I am ashamed to say I have not visited for many months, where the weekly hatch altogether by artificial heat, amounts to several thousands, where the eggs are collected from the surrounding country by wagon loads, and received by express from hundreds of miles away. This, though it may be, or may not be very successful as a business enterprise, is necessarily what common farmer folk can not imitate. It demonstrates, if demonstration be needed, the practicability of egg-hatching artificially. I have been interested in a more difficult problem, namely: Is artificial incubation profitable on a small scale? That I have not yet determined, yet hope what I write may add to the stock of general knowledge on this important question.

I have an Incubator for 100 eggs, without any automatic means of either regulating the flame, or the ventilation. The double water-tank is capable of holding some seven pails of water, and this mass of water changes in temperature quite slowly, so that after a little experience, the lamps may be so regulated, that the fluctuations of temperature are not very great. The most abundant ventilation is provided. This is superfluous in cold weather, but very important in warm, as the products of combustion, when the lamp is turned down very low, are without doubt deleterious to the eggs, or rather the chicks within them. My own days being largely spent away from home, the Incubator was left to the care of a lad of 11 years, who did very well, but could not be expected to take note of all the changes of temperature, and raise or lower the flame accordingly. We have had some fair hatches, and the young birds have proved exceedingly hardy and healthy, quite so much so as any we ever raised. A very small percentage were weakly, and since what may be termed the casualties of the nest, we have had no deaths by disease, and but one or two by accident. A hawk took one, one was chilled in the dewy grass of a cold morning, another was killed by a cross hen, and that is about all. We have used what is called

A Hydro-Mother,

which is a brooding box with a water-tank, having a screwed top opening, and which will hold 10 quarts of water. We fill it with boiling water, and the chicks nestle under it, having a few folds of flannel between it and their backs. In cold spring weather, the tank was filled morning and evening, in moderate weather, in the evening only, and as soon as the chicks began to take care of themselves—except on very cold nights—they were left to keep one another warm. When a fresh hatch was added, as a rule, the tank was heated once or twice. This of course in dry spring weather. On cold rainy days, we warmed the tank. I think this system is, on the whole, better than heating by a lamp. The "Mother" we use, will hold about 50 chicks, one or two weeks old. We have adopted the practice of excluding the older ones, by putting wire net of two inch mesh before the door. This forces the big ones to put up with an old fashioned hen coop standing close by, except on very cold nights, when we want them inside for extra warmth for the young chicks, and they are allowed to pass within.

A pair of little wheels were placed under the rear end of the brooding box, and so it is moved about. The chicks thus become accustomed to associate their domicile with no particular locality, which will enable us, as the season progresses, to move them up and associate them with the other fowls. This is the story of our own chicken raising this season. We have kept in the brooder about forty chicks at a time. None have been trodden to death by the hens. None have been killed by taking refuge in the wrong coop. None have been troubled with lice or other parasites of any kind. Gapes has been unknown, and of course they have been thriftier and happier than any similar lot of chickens we have ever raised.

Good Luck with Incubators.

I alluded to the fact that some of my neighbors were trying incubators in a small way. They have had better luck than I. Their incubators had self-regulating attachments, and as a consequence there was less watchfulness required to keep the temperature right. They have hatched forty to sixty per cent of the eggs—that is, of the fertile eggs.

The story has often been told how plainly

The Chick can be Seen in the Egg,

but unless a person makes a study of it and examines egg after egg, time after time, with care and a good strong light, very little idea can be had. Pictures of the appearances would only mislead, for the same egg looks differently as it is turned and as the motions within it are more or less active. Of course all the observations are like watching the movements of vessels in a fog, but yet are quite clear when the observer knows what to look for. It would be worth while for any one to break an egg a day for the first two weeks, for up to nearly that time the examination of the eggs before the lamp will be of use. After that no illumination will give much idea of the continued development.

First, we observe on the second day an obvious cloudiness in some eggs—others that prove fertile show very little if any, perhaps on account of the thickness of the shells. The next day the cloud is denser and more local, the next, the head is seen as a black or dark spot, and about the fifth day it will be observed to move about considerably. A motion due to the fact that the yolk which contains at or near its upper surface the germinal vesicle or seat of life, is caused to float in the albuminous fluid by which it is surrounded, the germ side up, by means of thick masses of albumen, called chalazæ. This floating up of the yolk, and of the cloudy appearance and of the dark spots which indicate the places of the eyes and heart, and more or less of other organs as the time progresses, is of course entirely involuntary, but the motions which may be seen on and after the fifth day are obviously voluntary, and I suppose arise from the fact that the intense light is more or less disagreeable to the little prisoner. In some cases this motion is distressingly active, so that the observer is impelled to lay the egg aside and give the little fellow a rest, for fear of hurting him from over exertion.

The Removal of Infertile Eggs

is of course easy, and the thing to do. I found that eggs which had been ten days in the Incubator and were still clear, and when boiled for salad were perfectly good, but of course it would have been just as well to have removed them on the third or fourth day. An infertile egg will remain through the whole period of incubation without essential change, but those in which vitality has once existed, especially if development has once begun and then been destroyed, will soon spoil. So long as eggs remain vital they may be kept fit to eat—at least for many uses. For hatching they should be fresh of course, and the fresher the better.

Eggs should be kept for any purpose in a cool, rather moist place, like an ordinary cellar, and turned once in three or four days. This turning is to prevent the yolk from adhering to the shell. When this occurs the vitality of the egg is lost.

Dry Spring Weather.

May drouths are dreadful. Nothing so takes the pluck out of farmers as to see the grass crop burning up in May, or the rye over their broad acres struggling up to get two or three feet high and heading out with ears two inches long. Wheat comes on a little later, and there may be hope for that, and spring grains with plenty of rain may take a start as late as the first of June. With what shall we supplement the lost grass crop?

I am sowing "Golden Millet." I tried it a few years ago and raised a heavy crop, which was well liked by the cattle—rather coarse hay it is true, but if the cattle will eat it as well as they did before, I shall be satisfied. Some of my neighbors are putting in Hungarian Grass. That is an older and better known forage plant, and they know all about it. They have raised "Hungarian" and sold their timothy for years, and are satisfied. The

New Sorghum, "Early Amber Sugar Cane,"

promises well as a fodder crop, and I have a small patch of that to report upon by and by, but after all when it comes to a main crop—when I must put in something which will surely furnish good and abundant fodder I fall back on corn, Southern White Dent, or Evergreen Sweet. The millets and the sorghums, and the Prickly Comfrey and such things, must stand aside for corn. I suppose I am as old-fogyish as my neighbors who prefer Hungarian to Golden Millet, but old friends and true friends are to be held fast to in such times as these when clover and timothy and even orchard grass "go back on us." This is a season for the French system of *tanking* corn-fodder—"ensilage"—to prove its worth. The experiments, which have been well made, indicate that the value of the process is not much overrated. It is a pity that we can not try this on a small scale, for so many more would thus gradually work into it.

It seems as if a season beginning so dry would prove a wet one by and by, and even if so, the need of fodder crops will be felt, and much can be done after the first of July. Southern cow peas, and all the millets may be sown after that, and will make a crop with any good superphosphate, or with fine bone-dust and guano. I have had the best luck with that—say fifty pounds of Peruvian guano to a barrel of bone-dust. The war on the west coast of South America makes guano scarce and is likely to cut off our supply. Strangely enough we have no really good substitute for this valuable fertilizer.

A Floor for a Cow's Stall.

A floor so constructed as to allow of the quick removal of all liquid manure, and thus be kept

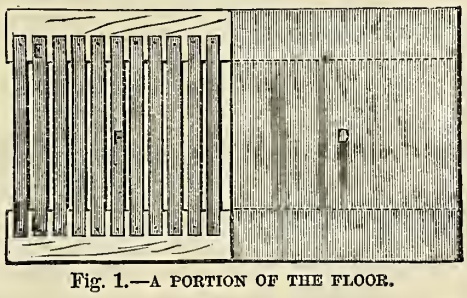


Fig. 1.—A PORTION OF THE FLOOR.

comparatively clean, is shown in the accompanying engravings. The sketches and description are from "C. A. N.," Rockingham Co., N. H., who has had a floor of this kind in use for some time, and is highly satisfied with it. Figure 1 represents a part of the stable floor, the front portion, *D*, for the manger and the fore-legs of the animals, is solid flooring. The rear portion is made of deep, but narrow slats, *F*, which are wedge-shaped, being narrow below and placed one inch apart. The slats, one of which is shown in figure 2, are 3 inches deep, 1¼ inch wide on top and ¾ inch on the bottom. The floor complete is shown in figure 3. The slats rest on cross-timbers, and are far enough from the floor below to permit the use of a hoe in removing the manure, and also to rake under litter of any kind to absorb the liquid manure. The floor should

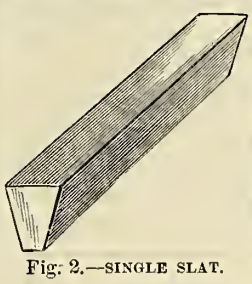


Fig. 2.—SINGLE SLAT.

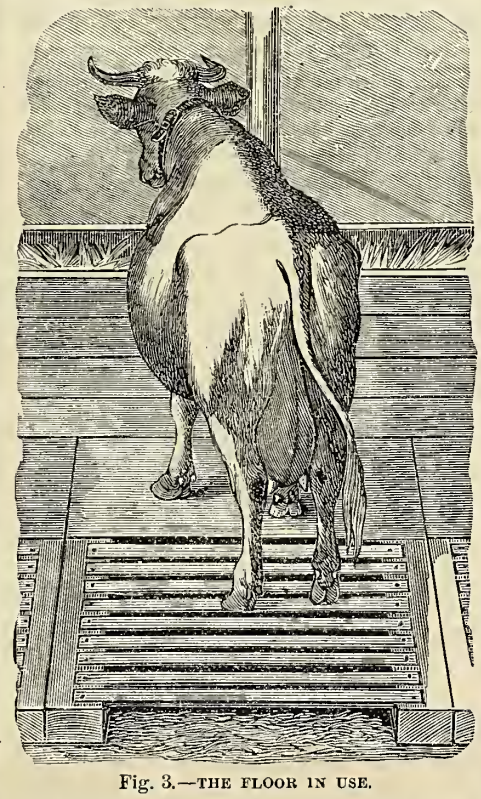
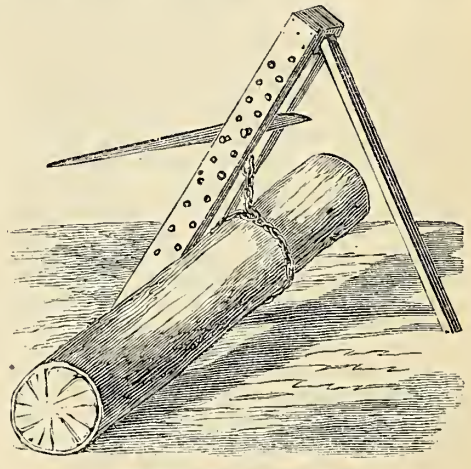


Fig. 3.—THE FLOOR IN USE.

be so long that there may be no danger of the cow stepping off at the rear. "The slats should be of white oak or some hard-wood that will not break or wear out quickly. Those who have used this plan of floor for the stable like it very much; it gives the cows a chance to lie down with some comfort."

A Log Raiser.

It is the thoughtful man who avails himself of any contrivance by means of which a heavy load can be moved without the direct application of main strength. This is what is called *advantage* in mechanics; and it can be obtained by the use of any one of the six mechanical powers, viz., the lever, wheel and axle, pulley, inclined plane, wedge, and screw; or a combination of two or more of these working together. To this end, the gaining of advantage, all machines are made. Mr. Peter Werner, Dubuque Co., Iowa, sends a sketch and description of a device for raising logs, which is shown in the accompanying engraving. The standard consists of two hard-wood planks 2 by 6 and 7 feet long; cleats two inches thick are inserted between them at the ends, and well fastened by bolts. A support 2 by 2 inches of sufficient length, and fastened with a bolt, holds the standard in position. A lever 4 feet long, with a hook, passes between the two planks of the standard. The latter has two rows of holes 4 inches apart and 3 inches apart



A DEVICE FOR RAISING LOGS.

in the rows. Two stout pins are necessary to hold the lever, which latter is provided with notches to fit the pins. In working the machine the pins are alternately moved up a hole at a time. "In this manner, a man can raise a log 3 feet in diameter on to the wagon without other help." There is certainly an *advantage* to be gained in using such devices if the most is to be made out of a limited amount of muscle or power of any kind. Of course it takes longer, but it is easier, and in that is the gain.

Hungarian Grass.—A quick growing plant is required for the production of a second crop upon the early rye or other stubble, and this is well supplied in the Hungarian Grass. If the season is warm and the moisture sufficient, with a rich soil, a large crop of this valuable fodder may be produced in from six to eight weeks. About one bushel of seed is required per acre, to be sown broadcast and slightly harrowed in. From the rapidity of its growth, the Hungarian Grass may be safely sown as late as July; but the best results may be expected when sown as early as June. Sown at intervals of a week or so it will give a succession of excellent succulent green fodder, and that when other green food is often scarce. The plant, when allowed to ripen fully, has a head bearing a multitude of hard, sharp bristles or awns, which are irritating to the stomach, especially those of horses which have fed abundantly upon it. Trouble from these can be avoided by cutting the crop so soon as the head is formed, and at the same time a better fodder in all other respects is obtained. Its excellence as a soiling crop is only equalled by its value for fodder when cured as hay. A few acres of Hungarian Grass on any farm is a good index of thoughtful and profitable farming.

A Cheap and Convenient Poultry House.

Poultry Houses may be expensive buildings—or suitable accommodations that answer the purpose equally well may be very cheaply made. The essential requisites are a warm, dry, well-lighted and ventilated shelter, that will ensure comfort in winter, with convenient arrangements for roosts, feeding space, and nest boxes. In winter, light and warmth are of the first importance. Fowls will not lay when confined in cold, wet, and dark apartments. Windows facing the south or southeast, large enough to admit the sun freely, should be provided,

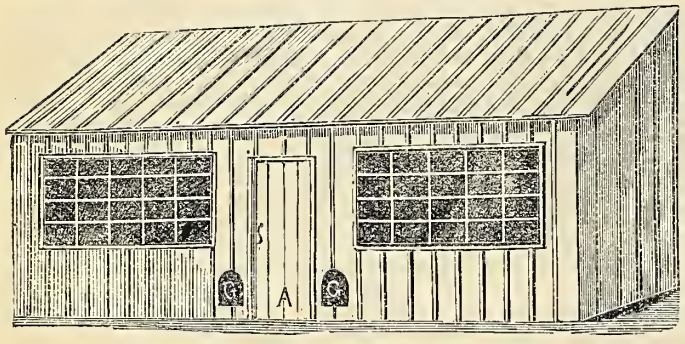


Fig. 3.—FRONT VIEW OF POULTRY HOUSE.

and made to slide so that a free circulation of air can be secured in summer. The accompanying plan of a poultry house will be found convenient, when two varieties of fowls are kept; yards being made in front of each compartment for an out-door range, when it is necessary to keep them in confinement. If but a single variety is kept, the hall and compartment at one end will answer the purpose, and the door, *A*, fig. 1, opening at the side, may be placed at the end. The ground plan, shown in fig. 1, is 10 by 29 feet; apartments for fowls 10 by 12 feet; *A*, outside door; *B*, hall, to provide for storing feed, giving access to the nests without entering the apartments in which the fowls live. Slatted gates, 6½ feet high, are placed at *C*; the space above the gates, and above the nest boxes, should be slatted to allow a free circulation of air. Large windows are in the side at *D*, *D*; *E*, nest boxes; *F*, roosts. The back nests are 4 feet high, front nests 2 feet; with large Asiatic fowls the roosts should be made nearer the floor. Figure 2 is a section through the middle of the house—from *O* to *P*, in fig. 1. The slats in front of the nest boxes are marked *H*; other letters as in fig. 1. The front elevation, 9 ft. high, is shown in fig. 3. The doors, *G*, *G*, for fowls, are near the main door, *A*, and within reach from the hall, so that they can be readily closed without going into the fowl apartment. An opening may be made over the main door, *A*, for the purposes of ventilation, with a sliding shutter that may be partly or entirely closed from the alley. The nest boxes may be 1 foot wide and 16 inches high. For convenience in cleaning, the nest boxes may be made in sections, so that they can be readily taken apart. The architectural

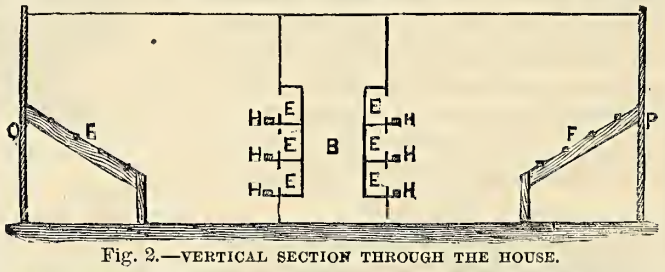


Fig. 2.—VERTICAL SECTION THROUGH THE HOUSE.

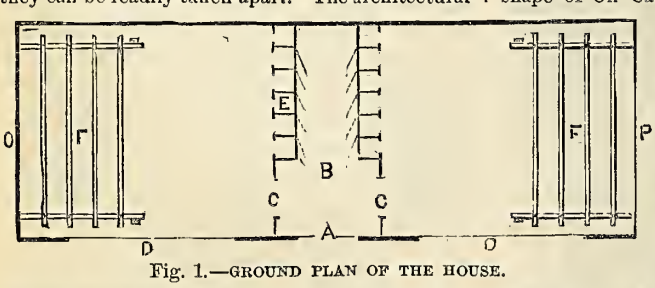


Fig. 1.—GROUND PLAN OF THE HOUSE.

finish of the exterior is a matter of taste, and may conform to that of the surrounding buildings, or, where cheapness is an object, something like fig. 4 or 5 may answer the purpose. Poultry houses are frequently made as a lean-to against other buildings, but all things considered, it is best to have them stand apart, and by themselves. They are not desirable near the horse stable, as vermin are liable to get on the horses unless extreme care is constantly exercised in their extermination.

The Use of Hay Tedders.

Since the introduction of the mowing machine there has been no implement put into the hands of the farmer of more importance than the Hay Tedder. At the present time, tedders are so perfect in their mechanism, and so easy in their action, that they may be ranked among the necessary labor and time-saving machines of the farm. The tedder is of more importance now than in the days when the grass was cut with the scythe, because the mowing machine leaves the grass evenly and compactly spread — like a blanket — over the surface of the meadow, so that while the upper side becomes parched and brittle, the lower portion remains wet and green. The swaths of the scythe mower were shaken out by a hand fork, and the grass left in a position for the air to penetrate the mass to dry it. Now, the tedder follows the mower and tosses the closely laid grass into all sorts of "criss-cross" shapes, and the very best conditions of rapid and even curing are thus provided. By its use the hay may be in many cases so rapidly made that the green grass cut in the morning is well cured, and may be housed, hay at evening. The value of hay depends so largely upon the way in which it is cured, that when the importance of the tedder is considered we must look beyond the time and labor saved, and note that the quality of the hay is much improved by its judicious use. In view of the experience which the American farmers have thus far had with hay tedders, it is clear that they are not only economical machines, but a growing necessity.

Feeding Waste Products—Starch Feed; Grains, Etc.

Various manufactures produce refuse which has more or less value, and it not rarely happens that the success of a process may depend upon the proper disposal of this refuse. Farmers are interested in some of these articles. The English farmer finds it profitable to send to this country for the refuse of our manufacturers of Linseed Oil, in the shape of Oil Cake. The refuse of breweries has long been used under the name of "grains," as have bran and other refuse of the flouring mills. The introduction of the manufacture of starch from corn, brought another material, "starch waste," to the notice of farmers, and still more recently, the production of glucose, or grape sugar, from corn, has placed still another refuse product on the market as Sugar Waste, Glucose Waste, or Sugar Meal. Some of these refuse products, like oil cake, can be transported a long distance, and be kept without change, while others are readily perishable, and can only be utilized as food for stock by farmers who live near the factories. The number of inquiries concerning the feeding values of these waste products, show that farmers are interested in the matter; these, as well as inquiries as to the feeding value of other grains, as compared with corn, were referred to Prof. Atwater; we bring his several replies together in the present article.

"Corn Feed." "Starch Feed,"

waste from the manufacture of starch and glucose from corn. No analyses of waste from glucose manufacture are, so far as we know, accessible. Below are analyses of "Starch Waste," or "Corn Starch Feed" from the Glen Cove Starch Manufactory, Long Island. No. 1, analyzed by Prof. Atwater, "as taken from the factory," weighs from 75 to 85 lbs. per bushel, averaging 80 lbs., and costs 23 cts. per 100 lbs. It is fed to milch cows, about one peck at a feed, being mixed with corn meal, bran, and sometimes roots. No. 2, analyzed by Prof. Johnson, is described as "sold in New Haven, Conn., at 20 cts. per bushel....a moist, slumpy, mass, with a sourish smell."

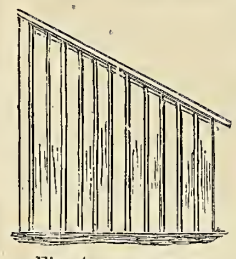


Fig. 4.—END VIEW.

	No. 1.	No. 2.
Water	72.19 per cent.	62.27 per cent.
Ash	.12 "	.27 "
Albuminoids	3.56 "	5.67 "
Woody fibre	3.36 "	1.58 "
Other Carbohydrates	18.78 "	28.90 "
Fats	1.99 "	1.31 "

No. 1 is calculated to contain, in digestible form: Albuminoids, 3.2 per cent; Carbohydrates, 19.3 per cent; Fats, 1.8 per cent. Reckoning these digestible nutrients at 4½ cts. per lb. for albuminoids and fats, and 9/10 cts. per lb. for carbohydrates, the valuation would be 39 cts. per 100 lbs. Doubtless the glucose waste is very similar to the starch waste.

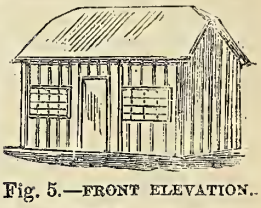


Fig. 5.—FRONT ELEVATION.

Corn Meal and Grains—Their Feeding Values.

In the *American Agriculturist* for Jan., 1879, p. 10, Dec., 1879, p. 497, and Jan., 1880, p. 9, are analyses and valuations of feeding-stuffs with explanations. The following figures, from these and other sources, refer to American products. They represent, not the total percentages of nutritious materials, but the amounts that are calculated from composition and results of feeding trials, to be actually digestible, and hence nutritious:

FEEDING STUFFS.	*Digestible Nutrients.* Albuminoids.	Carbohydrates.	Fats.	*Nutritive Ratio.*	*Valuation. Dollars per 100 pounds.*
	pr ct.	*pr ct.*	*pr ct.*	*as 1:*	
Corn, N. E. yellow, 8-rowed	8.4	66.8	2.8	8.8	1.04
Corn, Western, yellow	7.5	67.9	2.5	9.9	0.97
Corn, Southern, white	8.2	67.6	2.4	9.1	1.04
Corn, sweet	9.6	16.8	5.9	8.0	1.19
Oats, No. 1, white	8.7	43.3	4.0	6.2	0.94
Barley-feed	10.1	57.1	2.1	6.2	1.05
Rice-feed	7.8	49.1	1.4	7.3	0.82
Wheat-bran, (shorts)	10.0	48.5	3.1	5.6	1.01
Middlings	8.9	54.8	2.6	6.9	1.00
Rye-bran	12.2	46.2	3.6	4.5	1.00
Starch-waste (from corn)	3.2	19.3	1.8	7.4	0.39
Malt-sprouts	20.8	43.7	0.9	2.2	1.33
Palm-nut meal	12.9	56.8	14.0	7.2	1.67
Cotton-seed meal	33.2	17.6	16.2	1.8	2.80
Linseed-cake	27.6	27.0	10.4	2.0	1.89

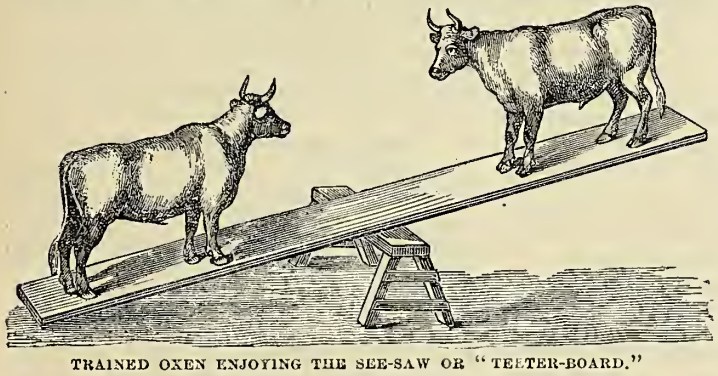
EASTERN *vs.* WESTERN CORN.—The analysis of "Western Yellow" Corn represents sample as brought in bulk from the West. Western Corn, well cured and housed, is fully equal to Eastern, but the field-cured corn, as it actually comes to the Eastern markets, seems to be somewhat inferior to our home-grown, as the figures above imply. Those who wish to study into the composition of American Corn, and other Feeding-stuffs, will find a valuable Compilation of Analyses of these foods, by Dr. E. H. Jenkins, in the Report of the Connecticut Agricultural Experiment Station for 1879.

London Purple vs. Paris Green.—Both of these substances are deadly poisons, and equally effective in killing the Potato Beetle. The "Purple" has some advantage over the "Green" in its greater cheapness, it being a secondary product in the making of aniline dyes. Cheapness obviates the

temptation to adulterate it, as has been done with Paris Green. The Purple is more finely pulverized and can be more thoroughly distributed either in the dry or wet way, and its color is more striking than the "Green," an important characteristic in any poison, making it more conspicuous to the eye.

About Training Animals.

"The Ox knoweth his owner, and the Ass his master's crib," was the expression used 2,640 years ago, by one of the grandest writers of that period, when he wished to express the stupidity of a people who could not or would not think or "consider." The form of expression and joining him with the ass, show the low estimate placed upon the intelligence of the ox in those days, and there has been little change in this respect down to our own times, despite the wonderful improvements made in the physical form of some hovine breeds. We attribute to horses a knowledge almost human, in the feats they are taught to perform, and we all have seen or heard of the "learned pig" even. But the most that is expected or sought for in the ox is to understand "Haw," "Gee," "'G'long," and "Whoa," and the failure to do so brings the inevitable blow from the goad. Thanks to a Massachusetts farmer, and to the enterprise of the noted showman, this low estimate of our patient, faithful servant is likely to be greatly modified. The tens of thousands of boys, and men too, who visit Barnum's "Greatest Show on Earth," as he is pleased to call it, will carry home one new idea at least, if they profit as much as we did, by dropping in specially to see the "trained steers," as that came directly in the line of our profession. They will learn that patience, kindness, firmness, with a reasonable amount of mental ability themselves, and using it, will bring the ox up to almost as high a degree of intelligent action and performance as has ever been exhibited by any other domestic animal, whether horse or pig, and we had almost said dog, though if half the stories told of dogs be half true, we must allow them to be a good deal human. One useful lesson we would inculcate is, that, as patient as is the ox, he doubtless *feels*, more than we are apt to think of, the cruel blows that are ever falling upon him from the first hour of being yoked until led to the slaughter-house, and not even there allowed the most kindly mode of sacrifice—as witness the clubbing, the torture of being swung up by one leg, encircled with a chain, etc. A second lesson is, that by proper treatment he may be trained to be even a much more serviceable friend and servant than he now is. Our own artist has illustrated, a single feat we saw performed by a pair of young steers—grade Alderneys, or perhaps a cross between Alderneys and Ayrshires, said to be twins, rather under medium size, of dark chocolate dun color, shading into black, with flecks and patches of white—about three years old, and raised, we believe, by Henry N. Taft, of Worcester Co., Mass. Well, these trained steers or oxen marched to the sound of music, danced to it a good deal better than the writer could; they, at word of command, or by motion of a whip (not hit by it) changed positions, lay down in different postures and places; knelt and walked about on their knees; they gambolled with each other in various ways, just as signaled to do by word or a wave of the hand; they each lay down, and the other walked over the prostrate one; and they climbed and stood upon boxes scarcely larger than a barrel; one would stretch himself out with his fore and hind feet upon two separate boxes, and the other crouched down and passed back and forth under his mate as often as directed to do so, and then changed places and repeated the performance; they walked up and down stairs, also came up in opposite directions, saluting (we suppose) as they passed. The boys cheered the most when one of them mounted the platform at the head of half a dozen steps, and reaching up his head pulled a string with his mouth that fired a pistol on the top of a pole above. (But this was a trick—the boys at a distance probably did not see that there was a small toothsome carrot on the end of the string.) The older people joined most in the cheering when these oxen deliberately, and with a good deal of ingenuity, managed to get on to the opposite ends of a long plank placed across a center stand two or more feet high as a fulcrum, and then changed their center of gravity and see-sawed as prettily as any two boys or girls do when they call out, "now we go up, up, upie, and now we go down, down, downie." And still more, one of them took position over the center, and by throwing his weight first upon his hind and then upon his fore-feet, which he did with ease, and made the long ends of the plank see-saw with a rapidity and regularity quite equal to their waltzing, in which they tripped off at a step that would hardly be called "light" or "fantastic," but lively, whirling and circling in a way which must certainly have been dizzy and mazy enough for them. We do not remember all their performances, but have given enough to show what can really be done in the way of teaching oxen. They were as gentle as cosset lambs, yet bright, sprightly, and quick in their motions. They travel in the yoke together, and go through all their performances without any boisterous words of command, without any whipping, but with a small whip always in sight, and perhaps an occasional threat, to quicken their obedient action. Their performances are simply the result of *training*, and as such are the evidence of patient, careful work, hour after hour, again and again repeated, by a kindly man. His success naturally suggests to the thoughtful mind the topic of



TRAINED OXEN ENJOYING THE SEE-SAW OR "TEETER-BOARD."

How to Do It.

The writer has had a certain success in training animals, which leads him not only to appreciate good results, but to know by what means they were brought about. When dogs are trained under the lash, they may do very well, but it is crouchingly, with the tail between the legs, with a certain uncertainty, as if they did not know for sure whether the dreaded lash might not be their reward even for well doing. This is pitiable, and is not the case with Mr. Barnum's cattle. They know that the whip is in reserve—and that is right. They have enough of what we may say is "human" in them to need both the reward of well doing, and the dread of the consequences of inattention and laziness. These are the "besetting sins" of oxen, and in fact of animals generally—as well brute as human. Now and then we have a horse, a dog, an ox, not unfrequently a boy, nervous, wide-awake, quick, thoughtful, prompt, easy to teach, that is, quick to learn, and with a good memory. Such are pleasant pupils, and do their teachers credit, but it is no reason why the stupid or less bright ones should not also be trained. Here is where the use of the whip comes in, not to produce fear of the consequence of honestly made blunders, if we may use the expression, but to keep the faculties active, and the wide-awake condition the prevailing one—not a punishment, but a spur. The observations apply equally to horses, dogs, cattle, and children, but of course each of these has its peculiar nature and tendencies which must be rationally considered, and must guide our training; with oxen which are slow in their motions, and deliberate in their thought and perceptions, the quality of patience and kindliness is especially necessary in training. It is easy to make any animal wild and scary, and so spoil the work of hours of patient labor, and cause a lack of that confidence in the trainer which is absolutely essential to success. When provoked by stupidity or wilful obstinacy, the trainer is very apt to get angry. It is the worst thing he can do, and if he can't help it, the thing for him to do—the *only* thing for any teacher to do—is to lay down his whip or rod and go away by himself and cool off; stir up in his own heart a sympathy for the brutes or for the boys.

We do not mean that in training animals a man may after a while go back, when cooled off—and then punish—that is well enough in the case of boys, for we "humans" have better memories and reasoning powers than brutes, and understand that punishment may be delayed and still be just, while with animals the punishment must always follow the offense quickly, promptly, kindly, coolly, *coldly*, as if a law of nature had been broken. If an ox runs into the thorn-bush, the thorns prick, they scratch his hide, they enter his flesh, they *hurt*—not after a while, but then and there, without consideration or pity. The punishment is exactly measured to the offense. We have an advantage over this thorn-bush system of training in that we may use persuasive measures—*rewards* as well as punishment—carrots and sugar as a reward for well doing. When the cattle in the show fired a pistol, they did it by nibbling at a carrot. (We suggest to the great Showman that a duel between the oxen, with clowns for seconds, a mule for referee, and the carrots labelled "satisfaction," would be an appropriate satire, which would be appreciated by the people and satisfactory to the cattle, if the carrots be fresh.)

A Garden Brush.—Mr. L. Prentice, Leavenworth Co., Kansas, sends a sketch and description of a Garden Brush which he has "used with great satisfaction for putting in small seeds. It consists of three poles about three inches in diameter, two of which are arranged as cross bars pinned together near each end, but about eight inches apart; and the third one, serving as a tongue, passes under the front bar and over the rear one, and is pinned

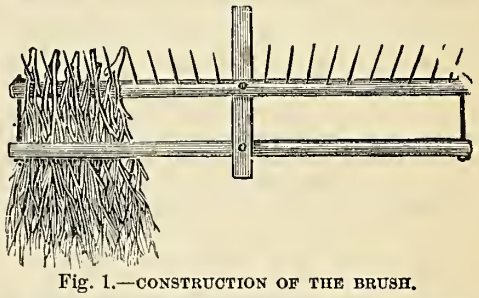


Fig. 1.—CONSTRUCTION OF THE BRUSH.

or bolted to both. The front bar has several upright pins on which the brush is hung by forks in the brush, and passing under the rear pole is held at an angle of about 45 degrees, bringing the small ends of the brush into wear until worn too short, when they are easily replaced." The construction of this garden brush, which is so handy for smoothing over the ground and covering small seeds sown in rows, is shown in figure 1, and in figure 2 it is complete and ready for use in the garden.

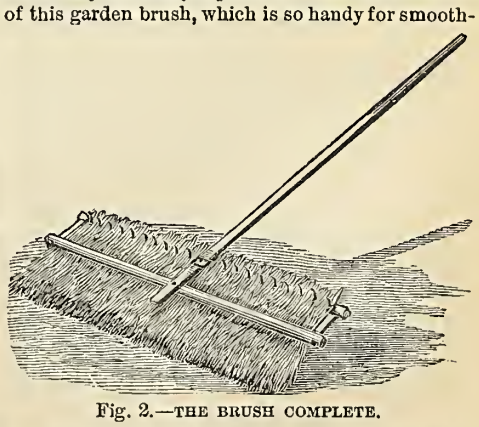


Fig. 2.—THE BRUSH COMPLETE.

Keeping One Cow.

[SECOND PRIZE ESSAY.]

[The judges who patiently went through the task of reading over 70 essays of various lengths, inform us that there were many of these that in some one particular were superior to all others, but that in awarding the prizes they were governed solely by the conditions of the offer. We here give the essay to which the second prize was awarded. It was signed "Doctor," and was found to be by W. L. Battles, Gerard, Pa. The prize essays, together with several of the most desirable of the others, will soon appear in a pamphlet or book form.—EDS.]

Instead of writing on how a cow might be kept, I propose simply to tell just how we manage our cow, what we feed her, how we procure that food; in fact, everything relating to her care, so that any one can go and do likewise.

"Spot," we call her, for she has a beautiful white spot in her forehead, is not a Jersey, for we can not afford to buy one at the prices at which they are held with us; nor is she a thorough-bred of any kind; yet she is a good cow, of medium size, fills a twelve-quart pail each night and morning, when her milk is in full flow, that raises a thick coat of rich cream, which, after being churned, furnishes all the butter needed for a family of six, and some to spare. Our place is small, only two acres, and a portion of this is covered by the dwelling, barn, poultry-house, etc. The fruit garden occupies about one-fourth of an acre, and from this portion nothing is grown to furnish food for "Spot." Adjoining the barn there is

Half an Acre in Grass,

or mostly clover; fine manure is liberally spread over this each spring and fall, and every spring a quart of clover seed is sown, so as fast as the old plants die out, young ones take their place. A bushel of land plaster is sown on this when the grass begins to start in the spring. This plot produces a very heavy growth of grass and clover, enabling us to cut it three times each season; about the first of June, August, and October. A coat of fine manure is always spread over the ground immediately after each mowing. The grass is mostly cured, and makes fine hay for winter feeding. Occasionally a small portion of the crop is used green for soiling. Besides the land occupied by buildings, fruit garden, and clover plot, there remains about one acre, which we call the garden. Here are grown all the vegetables for the family's use, besides some to sell. About one-fourth of it is planted to Early Rose potatoes, and as soon as these are sufficiently ripe for use or market, they are dug, and sweet corn, in drills, for fodder, is sown upon the land. Another fourth of an acre is planted to sugar-beets; the ground being very rich, the yield is always large; this season (1879), although very dry, I harvested 178 bushels. Our cow is very fond of the beets, and I think there is nothing better to keep up a flow of milk, and they give it no bad flavor, as do turnips. An additional fourth of an acre is planted to sweet, or evergreen, corn; as fast as the corn is picked for use or market, the green stalks are cut up, run through the cutting-box, and every particle of them consumed. As soon as the corn is all harvested, the ground it occupied is thoroughly fitted and manured, and then sown to winter rye, to be used for soiling the next spring, after which the ground is again prepared for corn. The remaining fourth acre is devoted to early peas, beans, cabbages, and other garden vegetables; as soon as one crop is off, the ground is prepared, and something else is almost always planted or sown; consequently, on the most of this acre, two crops are produced each season, except where sugar-beets are grown, or late cabbages, which require the whole season to mature. With the clover on the half acre, and the forage crops and roots on the acre, we have not only had sufficient food for the cow the entire season, but have also kept our family horse, with the exception of one load of oat straw purchased for three dollars, to mix in with the fodder corn; this is hard to cure sufficiently to keep bright and sweet through the winter, but by mixing a layer of corn-fodder, and a layer of straw, it all comes out nice and bright. Besides keeping both horse and cow, we have marketed from this little farm, in berries, vegetables, butter, eggs, poultry, and one fat hog weighing, dressed, over 300 lbs., $468 dollars worth of the above produce, keeping enough for our own use, and salting down one barrel of pork.

The barn is 25 by 30 feet, with the stable on the south side. The stall for "Spot" is five feet wide, and the floor on which she stands is five feet long, with a manger two feet wide in front, one and a half foot high next to the cow, and three feet next to the barn floor. She is fastened with a wide strap around her neck, attached to a chain eighteen inches long, which is fastened to a staple driven into a post at a corner of the stall adjoining the manger; this gives her room to turn her head so as to lick any portion of her body. The floor is made of two-inch plank, battened on the under side with thin boards, raised from the ground ten inches in rear and one foot in front; all the droppings and urine fall into the four-foot alley behind. This alley has a clay floor beaten perfectly solid and level. Next to the stable door is a large bin, 10 by 7 feet, for storing road-dust or muck; at the other end of the stable is another bin, 10 by 11 feet, for storing leaves for bedding. My great object is not only to make "Spot" comfortable, and have her stable free from all bad odors, but to save all the manure, both liquid and solid. I find the

Best Absorbent to be Dried Muck,

pulverized, or road-dust from clayey roads. As it is easier to procure the latter, I generally make use of that, and always keep from two to three inches of it in the alley; this effectually absorbs all the liquid portions and all offensive odors. Twice each day this is thrown out through a window closed by a sliding shutter in the rear of the stall, under a shed, where it remains until wanted for use. In the fall I go to the woods and procure a sufficient quantity of leaves to last until spring; a liberal use of these not only makes a nice, soft, clean bed, but largely increases the quantity of manure. The stable opens into a small yard, across one corner of which runs a small brook. Each morning the cow is permitted to go out and drink; if the weather is pleasant, she is allowed to remain out an hour for exercise. She is let out the same at night, after sunset in warm weather, so that she will not be annoyed by flies. The barn is well battened, and is warm in winter; it is well ventilated by two windows, but these, in summer, are darkened by blinds, with wide slats to keep out the flies. Each morning, while "Spot" is eating her breakfast, she is well curried with a curry comb or card, and if any filth is observed on her bag or teats (which is very seldom), it is carefully washed off, if in winter, with warm water. She is

Always Treated Pleasantly, Never Scolded,

nor whipped; consequently she never kicks over the pail, or holds up her milk. She is fed in winter with a peck of sugar-beets cut up, both morning, noon, and night; also a bushel of cut feed, either corn-stalks or clover hay, wet with a pailful of hot water, with two quarts of "sugar meal" or bran, thoroughly mixed together, with a little salt sprinkled over it. I generally use what is known here as "sugar meal" to mix with her feed; it is corn meal from the factory after the sugar or glucose has been extracted; it costs from 10c. to 12½c. per bushel, and I prefer it to bran, and "Spot" likes it very much. We consider her a machine for converting the food we give her into milk, and the more we can get her to eat and digest, the more milk is obtained, and the greater the profit. It is a good plan to change the food occasionally, substituting carrots for beets, clover hay for corn fodder, for brutes, like mankind, are fond of a variety.

There are root-cutters that can be procured for cutting up roots, but I have always used a common spade, ground sharp, and an empty flour barrel to hold the beets. It takes but a few minutes to cut up a mess of beets in that way. With one bin full of road-dust, and the other full with leaves, a winter's supply of litter is secured, and it is surprising what a pile of manure we have in the spring. Another valuable source of manure is the pig-sty, with plenty of leaves for a warm bed, and sufficient road-dust to absorb all the liquids, it is astonishing how clean our pigs are, and the sty is free from all bad odors; the big potatoes, and mammoth beets, show the richness of the pig-pen fertilizer. I think our fifty hens pay for all their food with the droppings the poultry-house furnishes. The roosts are over a slanting platform, which is kept covered with road-dust both summer and winter, the droppings fall on this floor, and roll down into a large box twelve feet long, three feet wide, and three feet deep. The dust the chickens work down with the droppings is sufficient to absorb all the ammonia and preserve all the fertilizing qualities of this most valuable guano. A large box of road-dust is always kept in the water-closet, a liberal use of which furnishes a quantity of most valuable fertilizer, besides freeing the closets from all noxious smells. The wash water and slops from the kitchen are utilized by being thrown on a pile of sods and other rubbish, which are forked over, and as soon as decayed, carted to the manure pile. From so many sources we are enabled to give our small farm a

Most Liberal Supply of Manure

each spring and fall, so that even with the double cropping most of it gets, it continues to improve, and yields more bountifully each succeeding season. For sugar beets, the ground is first manured heavily, plowed deep, and thoroughly pulverized with the cultivator, then marked out in rows with a garden plow, two feet apart. Manure from the poultry-house is scattered in each furrow, which should be lightly covered with soil, so the seed will not come in contact with it; drop the seeds about six inches apart, covering lightly with the garden rake. When the leaves are about four inches long, thin out to one plant in a place, and fill any vacancies with the plants pulled out. Hoe them thoroughly, destroying all weeds, which can easily be done by cultivating each time before hoeing, with a narrow cultivator. Keep the ground mellow, and cultivate three or four times, after which they will take care of themselves and soon cover the ground. With ground in good condition, and a fair season, 600 to 800 bushels per acre can be easily produced. Let them grow until frost comes, when they should be dug with a garden fork, the tops cut off, and stored for winter. Those to be used before the first of March, are stored in the cellar, the others are buried in a long pit, digging out a shallow place, piling up the roots about three feet high, and three feet wide, covering well with straw and sufficient soil to keep them from freezing, putting in a drain tile about every four feet in the top of the pile, with one end to project a little through the covering, for ventilation. If the weather becomes very cold, lay a turf over the tile, and remove when pleasant. I grow carrots after the same plan, and store in like manner. I prefer beets, as they are so much larger, it is less trouble to gather and take care of them, and the crop is generally larger, still I always grow some carrots for a change. I plant sweet corn in drills, always put some fertilizer along the furrow, dropping the kernels about eight inches apart, with the rows three feet wide, I commence planting soon after May first, and continue at intervals until about July 1st, so I can have a fresh supply for use, and market, all the season. The sweet corn being grown on the plot sown to winter rye, for soiling, enables us to cut some portions of it twice, before the ground is needed for corn. When sowing corn for fodder, which is done as soon as we commence digging the early potatoes, I sow it in drills two feet apart, and drop the kernels about one inch apart in the drills, manure from the pigsty is first dropped in the furrow, and covered with soil at least two inches deep, or the corn will not come up. This fertilizer is so strong, if properly used it causes a most extraordinary growth of stalks. While the corn is small, cultivate it two or three times with a narrow cultivator, when it will take care of itself, and there will be a surprising growth of stalks; I have them often six feet high. Just before time for frosts, cut it with a scythe, and set up in small bunches bound around the top, and leave to cure until cold weather. When it is to be put in the mow, spread

alternately a layer of stalks, and a layer of straw, and it will keep bright and sweet until wanted.

The Rye for Spring Soiling,

is sown when the sweet corn is picked, and stalks removed, in drills about ten inches apart. Fine manure is spread on the ground after plowing, and thoroughly mixed with the surface soil, and one or two hoeings being given to keep the ground mellow, and to destroy any weeds that may make their appearance. By May 1st, the early sown rye will cover the ground with a dense growth, at least four feet high, furnishing a large quantity of most nutritious green food. On those portions of the plot where the latest corn is to be planted, two or three cuttings are made; this makes most excellent food for the cow, and the quantity grown on this fourth of an acre will surprise any one who has never tried it. There is quite a plot of early peas, and as soon as the last picking occurs, while the vines are green, they are pulled and fed to "Spot," who relishes them very much. Turnips, or corn, is at once sown on the ground where the peas were.

When our early cabbages are taken up, all the leaves, and much of the stalks, are turned into milk by taking them to the cow's manger, and the ground at once planted, or sown, to something that will make more food. The beet, carrot, and turnip tops, and late cabbage leaves, make quite a quantity of feed late in the fall, if care is taken in saving and preserving them. Possibly there may be some better forage crop than "evergreen," or sugar corn; I think another fall I will try the Minnesota Amber Sugar Cane, in a small way. I tried Pearl Millet, in one row, this season; it tillered, or spread wonderfully, but did not do so well as the corn, as the stalks were small, and the millet makes such a feeble growth, at first, it requires the whole season to make as much fodder as I get from corn sowed the fourth of July. I generally manage to have the cow come in about the first of September; by that means, the six weeks she is allowed to go dry, occurs during the very warmest portion of the summer, during July and August, when, with the facilities the person possesses who keeps but one cow, it is difficult to make good butter; it is also the season when butter most generally sells the lowest.

The calf is taught to drink after it is a week or ten days old, and fed on a porridge made from skim milk and wheat middlings, or shorts; by the time it is six weeks or two months old it will be well fattened, and can be sold to the butcher for veal, at a good price, for at that time of the season veal is scarce and in demand. The cow being in full flow of milk all winter, when butter is most always high, will pay a good profit for her feed and care. A couple of weeks previous to the time the calf should be born, I make a box stall on the barn floor, and permit the cow to run loose in it until the calf is taken away to learn to drink. During this time she should have a good bed of leaves, and the stall cleaned each night and morning. So far at such times I have experienced no difficulty, or trouble; should any occur, it is better to apply to an experienced person, than to try and doctor her yourself. After the calf is born, I feed the cow on warm slops a day or two, permitting the calf to suck until the swelling has gone from her bag, and it has assumed its natural condition, then, as before stated, teach it to drink, which can easily be done, by inserting the finger in its mouth, and putting its head in the dish, cautiously withdrawing the finger, a few times, and in a short time you will have no difficulty, as it will help itself.

In conclusion, I can say I have tried to state just how our cow is managed and kept. I presume there can be improvements made on our system. I shall be glad to take advantage of the experience of others, at any and all times. No record is kept of the milk obtained, nor the butter made. We know we have always plenty for the family's use, and considerable to spare. Bread and milk furnish the children half their food a portion of the time; pure milk and plenty of fresh fruits, in abundance, we consider to be one of the principal reasons why our family is so healthy, and we have so few doctor's bills to pay.

From our acre and a half, all the food has been grown for both cow and horse, except the $3 expended for straw. The "sugar meal" given the cow has not cost over $5 during the past year; it is safe to say that one half, and probably more, of the clover, corn fodder, green rye, etc., has been fed to the horse, consequently the keeping of the cow can all be credited to the small area of

About Three-fourths of an Acre

of land, in addition to an outlay of not exceeding $7 for meal, bran, and straw. This land, about one half of it, has also produced, in addition, full crops for the use of the family, or market, while the sour milk, and buttermilk have largely assisted in making 600 lbs. of pork. The calf, at less than two months of age, was sold for $8, which more than paid for the extra feed bought for the cow. The family that has never kept a cow can hardly realize the satisfaction and benefits derived from such a source. Children, whose appetites are often capricious, will almost always relish a cup of cool milk. Cream, for our coffee at breakfast, is much enjoyed by all, but realized by few, and what can be more delicious than a nice dish of strawberries smothered in rich yellow cream. When we consider the small expense, the little trouble and care, contrasted with the great benefits derived, it seems surprising that any family will deprive themselves of so great a boon as that of keeping a cow. "Doctor."

Novelties are not always New.

Implements and devices of various kinds are from time to time brought out and fully explained as new, when the facts are frequently far otherwise. An illustration of this came to our notice a short time ago, in looking over an old work on agriculture, entitled, "The English Improver Improved, or the Survey of Husbandry Surveyed" (1652). On page 202 of this ancient work, a number of plows are figured, among which is, "The Double Plough, ploughing two furrows at one time." It is not to be expected that 228 years of the most progressive time in the world's history has brought no changes in the construction of double plows; but nevertheless the fact of their antiquity, remains the same. The directions for the making of the old double plow are very full, and as a matter of historical interest, we give some of the points, together with an exact reproduction of the plow itself. "The double plough shall be as plain as may be, it shall consist of one long beam of an ordinary length, and another short one, little above half the length of the other....I proceed to the making of the hindermost plough, which must be made in all its members and branches like the other, except the beam cut off three inches before the Coulter-hole.....The handles upon the last plough you must set to the

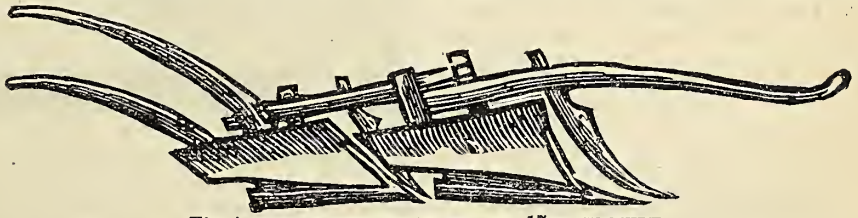


Fig. 1.—THE DOUBLE PLOW OF THE 17TH CENTURY.

placing of it in his place, which I discover thus, the first plough standing in its working posture, the other plough with the handles to it, to be affixed on the nearer side, or left-hand, one furrow-breadth wider than the other, just in the same posture, both for depth and breadth as the other doth, and so held off from the first plough-beam, by a lining or filling of wood, just that substance as may continue it firm and fast.....All which may be so keyed and cramped up, that it may be as one solid beam, and so move as the first moves.....I for present see not but it may be of excellent use and expedition, upon many lands in England; and to say much more is needless, in regard of which hath been before spoken, and experience of a good ploughman will order it at pleasure."—Both the plow, and the language of its description are old, but on this account are not the less interesting. "As to the Coulter, (fig.2), his truth of workmanship lyeth in this, whether it be Dutch or English Coulter.....If a Dutch Coulter, then the wheel to be very well slutted, and about ten inches high, and to go as true as possible; for the false cutting of the wheel will make you work at a great uncertainty, which Coulter is not useful, neither upon stony, gravelly, flinty, broomy, or rooty ground, but upon pure turf, or pure mould, on which it goeth very easily. The midst of the wheel had need be an inch thick, because of wearing, and so wrought thinner and thinner towards the edge round, untill it comes to be as thin as a knife if it were possible, but because this Coulter is with many of high esteem, and of some advantage, and yet not much known, I will give you a figure of it, as also of the best sort of English for its compass." This old instrument for cutting the sod before the plow, in its general make-up or "style," as we may call it, is very different from those used at the present day, but the principle of construction and action is the same, namely, a revolving cutting edge. Those persons who are of the opinion that the wheel Coulter so largely mentioned and generally re-introduced some years ago, was entirely new, must on seeing this, feel in some measure the basis of truth in the wise-man's saying, "There is no new thing under the sun."

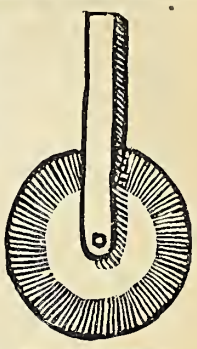


Fig. 2.—ANCIENT WHEEL COULTER.

Replacing a Horse's Shoe.—In the busy season on the farm there is often much time lost and work delayed by frequent journeys to the blacksmith shop. Many of these visits are unavoidable; but when made for the simple resetting of a single horseshoe, it is expensive. A job like the replacing of a "thrown" shoe should be done at home. It is not a difficult one, and the needed tools are few and inexpensive. A light hammer, a pair of pincers, a punch, all of which every farmer's work shop should contain for other uses, and a few horseshoe nails, are all that is necessary. It might be well to add to this a blacksmith's plane to smooth down the face of the foot, but for the simple resetting of the shoe this is not required. If the shoe is only loose, it may be tightened by driving up the old nails and clinching them anew, but if quite loose it had better be taken off, which can be done with the pincers, care being taken to not break the hoof. All the old nails should be removed by using the punch. The most difficult matter is the driving of the new nails, which must be so "pointed" at the end that they may not go into the "quick," but come to the upper surface of the hoof an inch or so above the sole. This can be learned by watching a blacksmith, and if he is a good-natured one he will willingly show how it is done. A little practice will render it an easy matter to drive the nails in the proper manner. As the nails are driven through, they should be turned down, and afterwards nipped off with the pincers and curved in to hold firmly. The work of resetting a shoe can be quickly done, and at a time when no loss is incurred. The morning before work, or the hour of rest at noon, may be so employed, and a journey saved, of miles it may be, to the nearest blacksmith. The shoe may come off at a time when replacing it at once will save the labor of the team and hands for a half a day or more, in which case the ability to reset the shoe is a very labor-saving accomplishment, and should be possessed by every economic and energetic farmer throughout the country.

A Baker's Oven.

The following designs, figs. 1, 2, 3, and 4, represent a baker's oven, suitable for a village of from twelve to fifteen hundred inhabitants. It is built under ground, and usually placed below the side-walk in front of, and adjoining the basement, or baker's work-room, towards which the openings are made to face. This position is preferred because of its accessibility in building and repairing. Figure 1 shows the position of the oven openings and doors, as they appear on the inside of the basement wall. The hight of this wall is 8 feet. If the general depth of the basement is less, then a pit is made in the bottom, immediately surrounding the oven front, with a marginal step of brick work. The doors and their frames are of cast iron, and are set in the brick-work when building. The upper double doors open from the oven's mouth; below it is the door of the ash pit. The round opening above the double doors has an 8-inch iron collar, to which a smoke pipe is attached, leading to a chimney. The niche at the side, and on a level with the oven mouth, is for a yeast kettle, below which is also a grate, and ash-pit doors.....Figure 2 is a plan of the oven floor, and the surrounding walls; *A*, floor, "pear-shaped," and measuring an average of 9 feet in diameter; *B*, iron grate bars, and frame; *C*, *C*, openings to the smoke flues; *D*, yeast kettle (16 quarts); *E*, *E*, foundations of stone-work: *F*, mouth of oven; *G*, *G*, front wall. ....Figure 3 is a cross section showing the construction of the foundations, ash-pit, oven arch or dome, smoke flues, and the surrounding earth.....

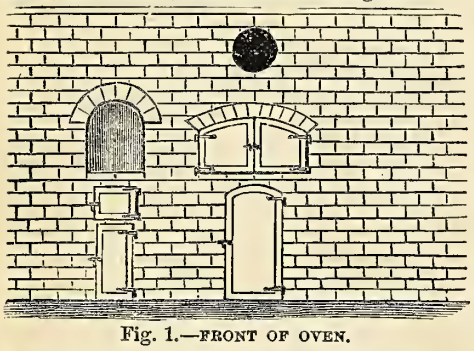


Fig. 1.—FRONT OF OVEN.

Figure 4 represents the top of the completed oven, and the course of the smoke flues, the latter leading from *C*, *C*, in fig. 2, to the smoke-pipe opening shown in figure 1.....In building it is important that the foundations shall be solidly constructed of the best material, at least 2 feet thick, and 13 feet square, with a perfectly level surface.

The shape of the floor is then described on the surface, the grate set, the floor laid of fire-brick, and the surrounding brick-work started to a hight of 4 inches. The interior mold or form of the dome is then made of sand, raising the center 18 inches. The dome is laid upon this mold, the first course being of fire-brick and the balance of ordinary hard brick. Over the dome the smoke flues are laid, also of hard brick, and the whole covered with a coat of hydraulic cement mortar, and finally enclosed with earth. In laying the flues, care must

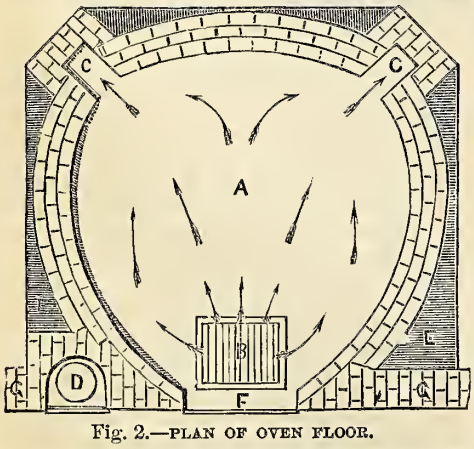


Fig. 2.—PLAN OF OVEN FLOOR.

be taken to make the interior smooth with straight sides converging at the pipe opening from which they may be cleaned as required. A damper is required in the smoke-pipe to regulate the draught. The smoke flue from the kettle grate may be built in the wall or by pipe leading to the chimney, as

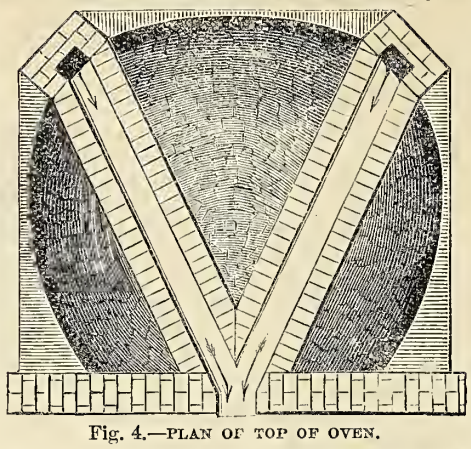


Fig. 4.—PLAN OF TOP OF OVEN.

shall be most convenient. At completion the sand may be immediately removed from within the oven through the mouth, and the whole allowed to dry out for at least eight days, after which a slow fire may be started on the grate, and increased gradually until the required degrees of heat are obtained, and the oven is then ready for baking.

Sawdust for Bedding.

One of our most valued correspondents writes: We have tried for two years dry sawdust in the cows' stable, and on the whole like it better than any bedding we have ever tried. It makes a more comfortable bed, completely absorbs the urine, and the cow is kept clean with less labor than when any other is used. The objection to salt marsh sods, dried, or to headlands, and dry muck, is, that they soil the cow, and make it necessary to wash the bag before milking. Straw, of all sorts, soon becomes foul, and, without more care than the ordinary hired man is likely to bestow, soils the cow's bag also. Dry sawdust is clean, and makes a soft spongy bed, and is an excellent absorbent. The bag is kept clean with the aid of a coarse brush without washing. A charge of 15 bushels in a common box stall, or cow stable, will last a month, if

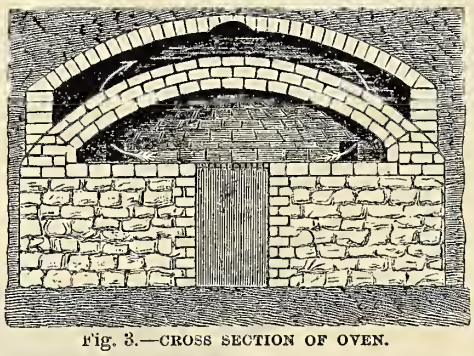


Fig. 3.—CROSS SECTION OF OVEN.

the manure, dropped upon the surface, is removed daily. The porous nature of the material admits of perfect drainage, and of rapid evaporation, of the liquid part of the manure. The sawdust is not so perfect an absorbent of ammonia as muck, but is a much better one than straw, that needs to be dried daily, in the sun and wind, to keep it in comfortable condition for the animals. In the vicinity of saw and shingle mills, and of ship yards, the sawdust accumulates rapidly, and is a troublesome waste that mill-owners are glad to be rid of. It can be had for the carting. But even where it is sold at one or two cents a bushel, a common price, it makes a very cheap and substantial bedding. The saturated sawdust makes an excellent manure, and is so fine that it can be used to advantage in drills. It is valuble to loosen compact clay soils, and will help to retain moisture on thin sandy and gravelly soils. There is a choice in the varieties of sawdust for manure, but not much for bedding. The hard-woods make a much better fertilizer than the resinous timber. To keep a milch cow in clean, comfortable condition, we have not found its equal. *

Shocking Grain.

One of the greatest sources of loss in the grain field arises from the imperfect putting together of the bundles in shocks for curing. The common practice of shocking grain in a careless and hurried manner is, in a literal sense, "shocking." It matters not how perfectly all the other operations of the grain field are done, if the bundles are not properly set and secured from the wind and rain, the grain can not be, in "catching weather," above second class. If the shock becomes once wet through, as, if not well made, it is sure to be during a rain, the grain is very apt to grow in the shock, and poor flour, and consequently an inferior quality of bread, is the result. There is no trouble in making the shocks in the right way, if one determines to do it, and will use a little common sense. It is a common way to cut down and bind up, all the day through, and just as night is coming on, all hands turn to and set the sheaves up in the most rapid manner possible. Should a strong wind arise there are few shocks thus hastily thrown together, but will be whisked and tumbled into a confused heap. Hurried work like this is all wrong. If any farm-work should be done with care, it is the shocking of the grain.

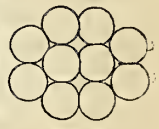


Fig. 1.

The number of bundles in the shock may vary somewhat, 16 is sufficient. Each bundle should be set firmly upon the ground, and this can be best done by taking one in each hand at the same time, bringing their heads closely together. After three pairs have thus been placed in two rows, two more are to be put upon each side, thus making an oval shock, shown in outline in figure 1. The heads of all the bundles are then to be pressed together, and the cap-sheaf adjusted. This is done by taking an ordinary sheaf, with the band shoved down to within eight inches of the butt, and the top bent out into the shape of a funnel—this done, the sheaf is placed on the shock as shown in figure 2. A second form of shock, which may be considered a double form of the one just described, is shown in outline in figure 3, and consists of 16 bundles, including the two top-sheaves. Four pairs of bundles are first firmly set together, and three placed on each side. The cap-sheaves are made as in the first case, only one side of the "funnel" is left open, each sheaf forming one-half of the shock-cap, as shown in figure 4. Grain that is shocked in either of these methods, and is done by a man who cares for the quality of his work, will stand and be perfectly safe and sound, when the piles made by boys too small to set the bundles firmly down, or worse, by careless, wasteful men, will be wet through and approaching the state of a pile of litter.

Fig. 2.—SINGLE CAP-SHOCK.

Fig. 3.

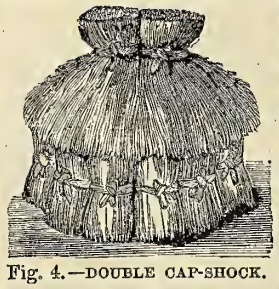


Fig. 4.—DOUBLE CAP-SHOCK.

There is Work in America. — A writer in "The Farm" (Dublin), tells his countrymen that America is no place for the idler, but a country where work is wanted, and where it is always well awarded. "If our laborers were equally diligent at home, our farmers would be able to give better wages, and more employment." — "Thousands of laborers think that they have only to go to America, make money, and live happy all their days."

The Leaf-Folder of the Grape-Vine.

Grape culture is in one respect no different from any other branch of horticulture—it is a continuous war upon insects. Those who give proper care to their vines, meet with a constant succession of insects from the time the young shoots push until the fruit is well advanced. One of the earliest in this procession is found at the very ends of the developing shoots; after a few leaves and embryo clusters, or bunches of buds have shown themselves, something appears to be the matter at the end of the shoot. While the lower leaves go on and grow, the uppermost cease to develop; they appear to be stuck together, which an examination will show to be really the case; the leaves are held together by threads, and in the cavity thus formed will be found one or more small caterpillars, as shown in figure 1. These caterpillars, when full grown, are half an inch long, of a pale green, and on each of the rings are cream-colored warts, each of which bears a tuft of white hairs; when very young these hairs are not present. In about three weeks, during which time it has eaten leaves, and it may be the buds, it goes into the pupa state. It fastens its head portion by a few threads, and with its body standing at an angle of about 40°, and curving forward, it turns into a chrysalis, which, singularly enough, is green when on the leaves and brown when on the bark of the old wood—a measure of protection, we may suppose, against the attacks of birds. After remaining in this apparently uncomfortable position for about a week, its changes are complete, and the perfect insect comes forth a small moth, shown in figure 2, of the natural size, which, as well as figure 1, is from Prof. Riley's Third Report on the Insects of Missouri. The moth is of a tawny yellow color, with the front wings marked with white and dark-brown, while the hind wings appear like burnished copper. This belongs to that group of moths known as *Plumes*, for the reason that their wings are split into feather-like lobes. This is known as the Grape-Vine Plume, its scientific name being *Pterophorus periscelidactylus*. The first or generic name means *wing-bearer*, and the other, or specific name, is a very long word for expressing the fact that the insect has *anklets*, its legs being surrounded by tufts of brown scales. Whether there is more than one brood in a year, and in what state the insect passes the winter until the young shoots of the vine appear, are points in its history not well made out. The harm the insect does is ordinarily but little. Usually each shoot of our native vines bears three bunches of grapes, and these appear opposite the three lower leaves. Ordinarily these leaves and the bunches of buds that are to produce the grapes are developed, at some distance below the bud where the caterpillars are at work. We are aware that there are exceptions to the number of bunches produced upon a branch, but ordinarily all the buds for the crop for the season are out of the bud and sufficiently below the point at which the insect has tied the leaves together to escape, and when a bud is found to contain the caterpillars, a pinch with the thumb and finger will remove it and prevent the insects from doing further mischief. But, many will ask, will not the removal of the bud, and thus preventing the further growth of the shoot in length, injure the vine? Not at all. It is exactly what some vine-dressers would do were there no caterpillars in the bud. Grape growers differ as to how far beyond the fruit the shoot should be stopped, but all agree in stopping it somewhere. The successful vineyardists of Missouri, including Mr. Husmann, stop the shoot just above the last bunch, while others leave two and three leaves above. This pinching is done very early, so soon as the clusters of buds can be fairly seen, and results in finer, larger, and better ripened fruit than can be had by leaving the shoot to grow in length. If the pinching is attended to in time the caterpillar is despatched before it can eat many leaves beyond those in which it incloses itself. If the presence of the caterpillars leads to promptness in pinching, it may be a benefit rather than an injury.

1.—THE CATERPILLARS.

Fig. 2.—THE MOTH.

Planting Fruit Trees for Ornament.

BY SAML. B. PARSONS.

The question is often propounded why a farm intended exclusively for fruit should not be planted for landscape effect; why a lawn could not be planted for ornament and only fruit trees be used. The only answer is that it is eminently proper and easily practicable so to plant both farm and lawn, that these results can be obtained, and the eye, the palate, and the pocket, all be gratified. The farmer will at once say, and truly, that to this there are two objections. The first is that he has no skill in the artistic laying out of grounds and grouping of trees, and that he can not afford to employ a landscape gardener for that purpose. The second objection is that fruit trees will not flourish when they are young without culture, that spade work is too expensive, and that he can not plow among trees irregularly grouped.—To avoid, therefore, straight lines, and yet to retain regularity sufficient to allow plowing, may not be productive of the best landscape effect, but may produce an approximation to it, and will certainly give much pleasure. The accompanying diagram will show the simple method by which any farmer can plant the space around his intended dwelling with fruit trees, and yet so preserve their irregularity that from his dwelling there will appear no straight lines.

A circle or its segment is the most pleasing line known. It is that of the sky above us, and could our eyes grasp it would be that of the earth below. The old Romans knew this when they adopted it for their arch, which the Gothic arch of the ruder ages can not equal. Let us take, as an example, a plot 500 feet on each side, which will have an area of something less than six acres. From the center of each side, run a line through the plot. Take the intersection of these lines for the center of the circle. In this center plant a strong, smooth and round stake. Over this drop the loop of a rope which will extend 251 feet. To the other end of this rope fasten a strong pointed stick. With the rope extended, mark the places for the trees on the segment, *A*, and plant them before touching the interior lines. Then shorten the rope 30 feet and mark the places for the trees on the circle *B*, and plant them. Then shorten the rope 30 feet more, mark and plant on circle *C* as before. Then shorten the rope 24 feet more, mark and plant on circle *D* as before. Then shorten the rope 20 feet more, mark, and plant on circle *E* as before. Thus the circles are all planted, and from the dwelling in the center one can scarcely see three trees in line. The irregularity is there, and if vistas are wanted through the lines the trees can be left out which close it. Between these circles, with the planted trees to guide his eyes, a horse can draw a plow with as much ease as on a straight line. Circles *A*, *B*, and *C* can be planted with apple trees. *D* can be planted with cherries and the taller growing pears. *E* can be planted with plums, peaches, and the lower growing pears. The straight outlines of 3 sides of the plot can be planted with apples; the front side with that stately and beautiful fruit tree, the American Chestnut. Now, to an eye looking from the house, the interior circle will have a bare, uniform, and naked appearance. Therefore this uniformity should be broken, as in the drawing, by outlying spurs and peninsulas and islands, by plantations of low growing trees and shrubs. Next the circle could be placed a few dwarf pears or apples, or mulberries or quinces. Then could come blackberries and raspberries, and filberts and currants, and gooseberries and barberries. Then could come flat-beds of purple hazel and purple barberry, kept down by pruning. Then graded down to the level of the lawn could be the strawberries. In one or two of the round beds standing alone could be placed some rhubarb, the broad leaves of which are

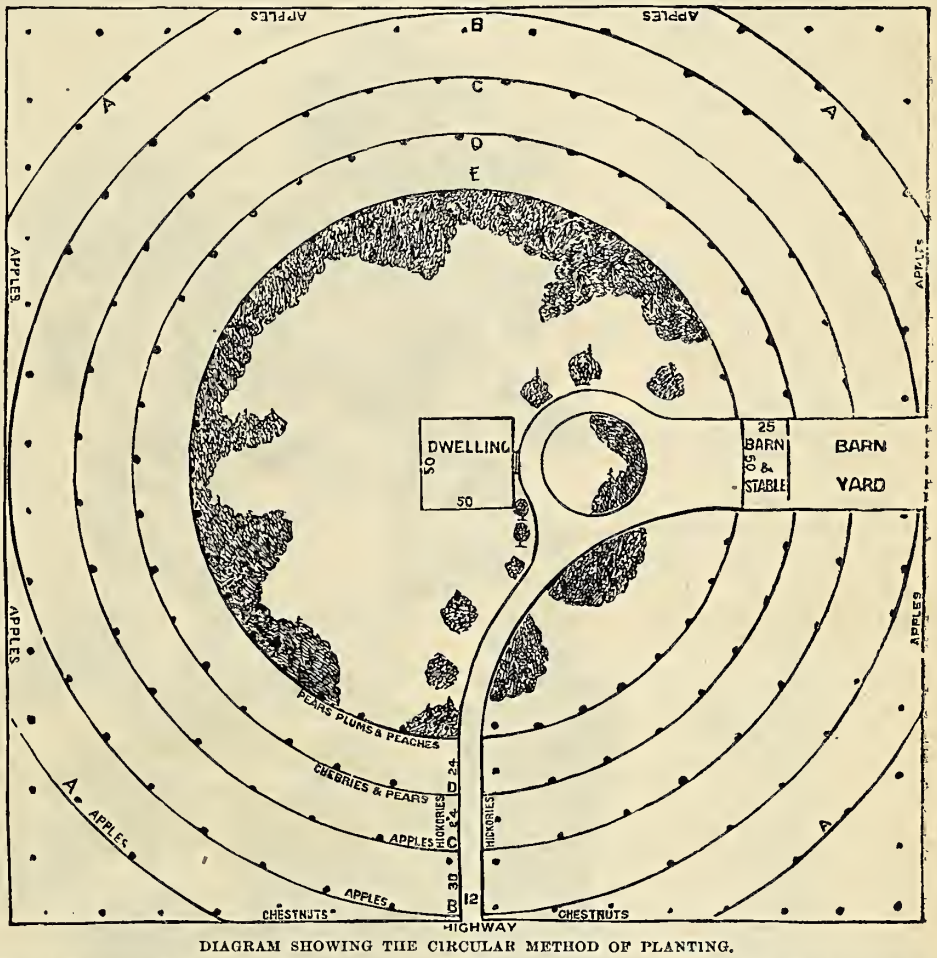


DIAGRAM SHOWING THE CIRCULAR METHOD OF PLANTING.

as ornamental as those of the Arum, and its spike of white flowers stands up in its middle like the flower of the Yucca. We have confined ourselves to fruits, but there is no reason why the lady of the house should not have scattered along the drives her groups of roses or bedding plants. In the circle between the house and the barn evergreen trees would best hide the latter. The carriage drive from the highway could be bordered with shell-bark hickories. Thus in the small space of five acres could be made a beautiful place, giving great pleasure to the eye, and furnishing all the fruits desirable for family use. It can be made, moreover, by any intelligent man, and does not need the aid of a landscape gardener.

The Bulbous Corydalis.

From the charming little plant with the uncouth name of Dutchman's Breeches, so welcome in the woods in April, to its gorgeous brother from China, that hangs its graceful strings of Bleeding-Hearts in our gardens in May, all of the Fumitory Family are pleasing. They have, as a general thing, handsomely cut foliage of a tender green, and their flowers have a peculiarity of form and a clearness of color that makes the amateur gardener say of each one "it's a good thing." We did not start with the intention of writing about it, but we may say with regard to one, the Plumy Bleeding Heart (*Dicentra eximia*) from the Alleghany Mountains, that, take it for all in all, it comes as near to being a thoroughly satisfactory plant as we expect to see. That is noted among other qualities for its long continued bloom. The one we would now speak of (*Corydalis bulbosa*) has an abundant bloom in early spring and is done with it. It may be said here that the Dicentras have two spurs, or lobes, to the flower, while in *Corydalis* there is but one, giving it a quaint one-sided appearance. The Bulbous Corydalis is a native of Europe and Asia and is thoroughly hardy. It has a solid bulb or tuber about as large as a hickory-nut; the stem, 6 or 8 inches high, has cut leaves, and at the top is a raceme of flowers of the size and shape in the engraving. A drawing can show size and shape, but the color must be left to the imagination. We may call it purplish-rose or rosy-purple, but that does not give an exact idea of the tint. As we looked out upon a closely planted bed of it in April, it occurred to us that we had not seen a more thoroughly spring-like tint—lilac does not describe it. It is the tint that suggests spring days, spring flowers, and—the spring fever. The plant keeps in flower two or three weeks, makes a strong leaf growth, and then having done its duty in giving us pleasure by its season of bloom and having provided for another next spring, all above ground soon disappears, to be thought no more of until another winter shall have passed, and spring has come around again.

THE BULBOUS CORYDALIS (*Corydalis bulbosa*).

The Clover Root Borer.

Mr. I. S. Peer, of East Palmyra, N. Y., sends a letter and a package of clover, both of which plainly show that he is very badly troubled with the Clover Root Borer. None of the insects are to be found in the honey-combed, and thoroughly eaten roots, but we have no doubt that the destruction of the plants was caused by the larva, or grub, of the beetle, known to science as, *Hylesinus trifolii*. This pest is rather new to us, but has been known in Europe for many years. Professor Riley thoroughly investigated the insect, and published his results, with an illustration of the beetle in its various states, in his Report for the year 1878. The *American Agriculturist* for November, 1879, gives an illustrated article on this Clover Root Borer. Mr. P., writes: "On examination, I found that I could with the side of my foot scrape the roots of the clover all together. These were entirely dead, or perhaps a leaf or two alive, but very small. The stalks that looked at all healthy, would not average four to the square foot. I had 21 acres, all of which was more or less effected, and I am now plowing it up for corn."—This is certainly a destructive insect, and its advent a serious matter. When it works in this way, in such destructive numbers, the only remedy is a total withholding of the clover crop, throughout the district. Half-way measures will do no good: there must be co-operation in the work by every farmer in the neighborhood. If one farmer continues to grow clover—or tries to grow it, he will merely provide insects to stock the fields of others, when they resume its cultivation. No direct remedy which will kill the insect is yet known, nor is it probable that one will be found, the application of which will be practicable to insects that work below the surface of the soil.

Water Cresses without Water.—Several persons in England have reported their success in growing Water Cresses in the garden. We gave, several years ago, Mr. Hibberd's method with pots and tubs, but this growing them in the garden will meet with more general favor. No definite directions are given; it is merely stated that the beds were sown sometime in summer, and that a bed sown in well prepared ground will continue for several years, as the plant reproduces itself from self-sown seed. The difficulty with us will be in carrying the plants through the hot, dry summer, and those of our friends who desire to experiment with Water Cresses in the garden, should select a place that is shaded during the hottest part of the day. Seedsmen generally have the seeds for sale.

Why Not More Currants.

Perhaps when we consider their real value, currants are more neglected than any other of the small fruits. Their value in the family is too well known for us to enforce, but their market value is greater than that of most, if not all other fruits. By this, we do not refer altogether to the money received for them, but to the fact that there are not so many drawbacks to getting the money at all. If currants are ripe they may be picked to-day, to-morrow, or next week, and must not, like the strawberry and raspberry, be picked by the clock. Currants sustain less damage in transportation; the delay of a train or boat by accident does not cause the loss of the crop; if the fruit does not sell within a few hours after it gets to market it will keep until the next day. As to the actual profit from an acre of currants we have no figures, but we notice that those who have had an acre are very apt to add another to it, which is quite as expressive as if we saw their account of sales. But the currant worm! Whoever finds that an obstacle should not cultivate currants—or any other small fruits. We do not know of one of them that will yield profitable crops without care, and the currant requires on the whole less care—currant worm included—than any other. Buy some currant bushes, get good big ones; plant them up against the fence, setting them so close to one another that their stems will touch and soon interlock; acting upon the principle of "the more bush, the more room for fruit," do not cut them—in short, follow the too common treatment of this fruit, and we have every reason to believe that currant culture will not pay. This is not the method of those who are increasing their plantations.—*The Soil* should be as good as can be had, and especially free from excess of moisture; no fruit will give a better return for manure.—*The Varieties.* Our largest growers depend upon La Versaillaise, or as more generally called Versailles, and White Grape. So far as we have seen, these, of the true sorts—and this is important—will, under good culture, do all in size of fruit and productiveness that any currants will do, though it may be that some others may be found to prolong the season. There is so much confusion among currants, that if one appears to have desirable qualities it is difficult to obtain it true to name—not from intentional wrong on the part of the nurserymen, but currants are so much "mixed."—*Cuttings or Plants?* Generally those who have plantations have so much surplus wood from pruning that they are glad to sell cuttings at a very low rate; one can purchase these and plant them in a bed, or buy plants one or two years old. Of course the purchase of plants will give one fruit a year or two sooner, while the outlay will be more. Cuttings should be planted in fall, and it is quite doubtful if they can be had in spring. *Planting* is better done in fall, but may be done in spring, but the plants should be taken up so soon as the frost will allow, as they start into growth very early. If lifted after the buds have pushed, this young growth may be injured, if not destroyed, in transportation, to the injury of the future of the plants. In setting out the bushes, four feet each way is the least distance for healthy growth and comfortable working, while five, or still better six feet, will in the end give better results than to set close. At planting, some pruning may be needed, but this will depend so much upon the former treatment and present condition of the plants that no directions can be given. *The Currant Worm* is as likely to come upon young bushes as upon old ones; hence the plantation should be looked to daily, and if any ragged leaves are seen, look for the enemy. On small bushes much may be done by hunting for the eggs, which are upon the underside of the leaves, especially those near the ground. When the enemy is discovered, use

powdered White Hellebore, either dusting it from a bellows, or mixed with water, as we have described at the proper time, in Notes about Work.

The Raspberry Fungus.

So soon as the leaves of the raspberry and blackberry bushes, both the cultivated and those growing wild, have reached two-thirds their natural size,

THE RASPBERRY FUNGUS.

and sometimes before, they are frequently noticed to be covered on the underside with a number of large patches of orange color. This spring we have received numerous letters, containing specimens of the plants affected by this trouble with the anxious and important question: "What can we do; for this disease is destroying whole rows of our raspberry bushes?" The trouble is a parasitic fungus—a little plant which sends its fine microscopic "roots" through the substance of the young growing leaves, and after a short time breaks through the surface and develops a vast multitude of minute spores constituting the fine dusty powder with a rich orange color. This fungus, unlike the grape mildew and other similar and comparatively slow acting parasites, is so rapid in its development, and has its course so nearly run by the time it *shows* itself, that up to the present time no preventive has been found. So soon as a bush is seen to be affected—and it usually attacks the whole raspberry plant if at all—the best way is to cut it down and burn it at once, thus clearing the ground of a useless bush and at the same time destroying a vast multitude of spores—or seeds as they might be called—that would otherwise find their way to other bushes and there reproduce the trouble.

Horseradish Culture.

There are certain crops that may be classed as "uncertain." There is a certain demand for them, but this cannot be increased, as the consumption is limited; and a small excess in the production, causes an over supply, and prices fall. Such crops are constantly fluctuating, the high prices obtained in a year of scarcity, induce many to grow them, and the next year will be one of glutted markets, and low prices. Again the culture will be abandoned by all but a few, and prices go up again, and so it continues, an alternation of extremes. Those who grow such crops in moderate extent year after year, no doubt make money in the long run, while the outsiders, who take them up only after a season of high prices, not only make nothing themselves, but prevent the regular growers from making it. Hops are such a crop, Tobacco to a certain extent another, and on a smaller scale, Horseradish. Just now, to judge from inquiries, there is likely to be another Horseradish boom; as many ask how to cultivate Horseradish, indicates that those who have never cultivated the crop, think of trying it; indeed, some know so little about the matter, that they ask where *seeds* of Horseradish may be had, and how much is needed for an acre! Such are evidently not aware that a Horseradish seed would be a curiosity, that few persons have ever seen. The plant blooms freely, but, in this country at least, fails to form seeds. Horseradish is always grown from sets, obtained in preparing the roots for market. These are about the size of an ordinary lead-pencil, and 4 to 6 inches long. As they should be planted "right side up with care," the lower end is cut with a slant, and the top square. These sets are to be had of the seedsmen generally. Regular market gardeners grow Horseradish to the best advantage, as they put it on the same ground with their early Cabbages or Beets, planting it between the rows. Early cabbages are set 18 inches apart in 2 foot rows, and the sets are put in midway between the rows, and as far apart as the cabbages; when grown between beets, those are in rows 18 inches apart, and the sets put in every two feet between the beet rows. When it is grown as a crop by itself, the Horseradish sets are put at the same distances, *i. e.*, 18 by 24 inches. When grown with other crops, it is kept down in the hoeing, until they are off, when it has the ground to itself. The sets are put in with a long dibble, taking care that the top of the set is about 3 inches below the surface. When grown between market garden crops it is always sure of a rich soil, and fine roots are produced; when grown by itself, the soil should be well enriched. It should always be dug in the fall or early spring, and never be allowed to grow more than one season. It may be planted any time during the month of May. In the family garden the same rule should be observed, *i. e.*, to always dig it after one season. If left longer it gets such possession of the soil that it is difficult to eradicate it, and it becomes a troublesome weed.

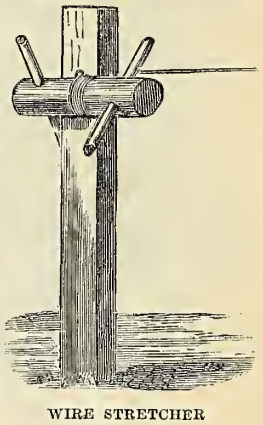
Stinging Caterpillars.

Notwithstanding that caterpillars have no stings, we every year have complaints from people who are "stung" by them. Even the great, green caterpillar, popularly known as "Tomato-Worm," has actually been accused of stinging, and is looked upon as dangerous on account of the ornament it wears at its tail end. But while caterpillars have no proper stings, several of them are not to be handled roughly, as they have very sharp hairs which penetrate the flesh and produce a disagreeable sensation similar to that caused by a sting. The hairs of some plants possess similar irritating properties, notably those upon the pods of a species of *Mucuna*, one of the Pea Family, called Cowhage, which name has been singularly corrupted into "Cow-itch." These hairs, when examined by the microscope, are found to be exquisitely sharp, and furnished with still smaller barbs, all pointing backwards, and tending to prevent the removal of the hair. A quite large caterpillar, the larva of the Maia Moth, is found upon the Oak trees; when full-grown it is about 2 inches long, and at that age bristles with much branched spines, which enter the skin very readily and cause much pain. But the caterpillar most complained of, and of which we have several specimens sent every summer, is popularly known as the "Saddle-back Caterpillar." It is so striking in its colors and markings, being quite unlike any other caterpillar, that it at once attracts attention, and as the discoverer is likely to wish to show the curious creature to others, he picks it up and finds that it is not so innocent as it looks. The engraving, from Packard, shows the insect of its real size. The body is reddish, with a very handsome light-green "saddle-cloth" spread over it; in the center is a broad elliptical reddish-brown spot, edged with pure white; a most striking contrast of colors. At the front and rear are pairs of projections or tubercles which are bristly with black hairs, which, when the insect is handled, cause the stinging sensation. This caterpillar feeds upon most fruit trees, raspberry bushes, and even on Indian Corn, of the silk of which it is said to be particularly fond. The perfect insect is a moth about an inch and a half across, of a rich, dark velvety brown, with a few small golden spots. It is never abundant anywhere.

SADDLE-BACK LARVA.

A Simple Wire Stretcher.

A correspondent in Virginia, sends us very neat sketches of a device for stretching wires in a vineyard, for a fence, or wherever else a horizontal wire is to be stretched tight. We have no doubt that this affair will do the work, and do it well, but as it is too much trouble to make it and to use it, and takes up quite too much room when not in use, we do not give it, preferring a much simpler stretcher that we have used for years, and which is as affective as any device can be. If we mistake not, we found t in use in the vineyards of Steuben Co., N. Y. It is simply a cylinder of hard-wood about a foot long, and perhaps 3 inches in diameter; this has a small hole in the center for the wire to pass through, and a hole near each end, to admit a half or three-quarter inch iron bar, these holes being bored in opposite directions. This piece of wood, which may be a section of a limb of an apple tree, or any other, sufficiently strong, and may be formed naturally, true enough for the purpose, and two iron bars 18 inches or 2 feet long, make up the whole machine. The manner of using is shown in the engraving. The holes in the post through which the wire passes, should be at least half an inch in diameter, for the convenience of fastening. The wire being made fast to the post at the further end of the row, is passed through the opposite one, and through the small hole in the center of the cylinder; the rods being in place, turn the cylinder gradually—two persons are handier than one at the work—and when the wire is sufficiently stretched, one holds the arms to keep all taut, while the other drives a wooden plug, made ready for the purpose, into the hole in the post. This should be driven in firmly enough to keep the wire from slipping, and when driven home should project beyond the post for 2 or 3 inches. Unwind the wire from the cylinder, give it a turn around the end of the plug, and the job is done. If it be desired to slacken the wires in winter, unwind the end from the plug, drive it out by means of an iron rod, at the other side of the hole, and the wire can be as slack as desired.



WIRE STRETCHER

Liquid Manure for the Garden.—It is a well established fact that the liquid is more valuable than the solid excrement of animals. It is much quicker in its action, because all the elements are in a soluble state, and are, when applied to the soil, more uniformly distributed. There is a great waste of this valuable fertilizing substance partly from a lack of a proper appreciation of its value, but mostly from a failure to provide some simple and inexpensive means of saving and storing it. The extra cost of building the stable and grading the barn-yard so that all the liquid manure may flow through a channel to a tank or tight bottomed pond, is trifling; but when the provision has been made, and the fertilizing elements thus saved are put to use on the garden, near by, the gain is marked, and the returns for time and trouble are more than satisfactory. Try it for yourself.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

A Fungus Fern Bracket.

There is no class of plants the individuals of which possess more beauty of form and grace of outline than ferns. They are generally and generously distributed through the rocky highlands and wet lowlands, and if these fine, delicate plants are not employed to lend their grace and beauty to the household, it is our own fault. It must be admitted that there is some work in fern-collecting, but with a little care it can be made a pleasant task. A large portfolio is the most convenient for gathering the ferns, which should be well supplied with smooth sheets of paper, into which the fronds, as their leaves are called, are to be carefully placed so soon as they are picked. If a basket or box is used, the delicate leaflets are apt to get crushed or broken, and if not kept wet will soon wilt and roll up, and are spoiled for pressing. After the portfolio is filled, or a sufficient quantity has been gathered, the fronds *with their papers* should be placed between other papers (newspapers will answer) and pressed. The simplest press is the best; putting the pile of papers under a board with a heavy stone or other weight upon it, is the ordinary and best method of drying and pressing plants. Those who do not find stones abundant can use instead, for a weight, a box containing old iron, or even dry earth, though in that case the box must be made very tight, by pasting paper over the corners. If much pressing is to be done it will make

A FUNGUS BRACKET FOR FERNS.

the work easier if a piece of hoop be fastened to the box as a handle to lift it by. If the box has a cover, and the whole is papered, the affair will look all the neater. The specimens will need to be changed into fresh, dry papers the next day, and at intervals until thoroughly dried. In changing the drying papers, do not disturb the ferns; they are to remain in the fold of paper in which they were first placed, and in changing, the paper with the plants is to be placed between dry papers, while the damp dryers are to be exposed to the sun for a short time. When dry, the ferns are to be put away in the folds in which they were dried, and kept under sufficient pressure to prevent them from curling up, until wanted for use. The dried fronds may be used for decorative purposes in various ways. One of the most attractive forms is given in the accompanying engraving, taken from Mr. J. H. Batty's new work on "Practical Taxidermy and Home Decoration." The design is a Fungus Fern Bracket, and requires a member of another family of plants, the Fungi. Those who go much into the woods will have little difficulty in finding specimens of this kind; they are found attached to trees, projecting like a little shelf not far from the ground. These are often called Agarics, an incorrect name; their proper botanical name is *Polyporus*. They grow with the smooth surface upwards, the reverse of the position in the engraving; are quite common in the woods, and some specimens are of themselves curious in structure and even beautiful in appearance. Having the fungus, it is to be mounted upon a shield, or back, made by cutting out a piece of thin wood in any desired pattern. The shelf-fungus is glued to this back near the bottom. The upper surface of the shelf may be covered with fine mosses that have been dried for the purpose. The moss should be glued on rather compactly, as it furnishes a bed into which the stalks of the fern fronds are stuck, and thus, aided by glue, are held in place. The arrangement of the fronds will depend much on the individual's taste, but, as a rule, the largest should be at the rear, with the smaller and more delicate specimens in the foreground. Fine grasses can be added, and here and there a butterfly may have seemed to have alighted upon the fronds, but to our taste simplicity is a prime element of beauty in all matters like this, and it is easy to overdo.

Home Topics.

BY FAITH ROCHESTER.

Bachelor House-Keeping.

I suppose everybody knows what "grass-widow" means—a woman living temporarily absent from her husband. I can think of no corresponding term to apply to a man in like condition, unless it is "grass-widower." I know of one who is just setting up his cabin on a northwestern prairie, prepared for a summer campaign of "breaking" prairie-sod. A boy of fourteen is with him as "chief cook and bottle washer." I feel a deep interest in their work, particularly in the house-keeping. The boy's success or failure in cooking, washing, etc., will bring credit or discredit to his mother—and that's me. I have lately heard the father inquire anxiously concerning his capabilities—"Do you know how to cook oat-meal?" "Can you make such graham bread as this?" "Does he understand the knack of making dried apples eatable?". "You know how mamma seasons the macaroni, don't you?" etc. Both are very fond of milk, and if they get a cow, or find good milk for sale close at hand, the cooking and eating business will be simplified. Milk goes well with almost everything that our folks eat, as we never use pickles, and vinegar very seldom. To make sure of cooking the oat-meal, cracked wheat, rice and hominy, properly, they have taken along a steamer made after the farina-kettle plan. They are directed to use one part oat meal, rice, hominy, or cracked wheat, to four parts of cold water in the inner kettle, with plenty of water to keep up boiling in the outer one.

To secure good graham bread, they have provided the best of graham flour and the dried "National Yeast Cakes." The cook will set a thin sponge at night, with half a yeast cake, and flour and warm water enough to make a large dripping-pan loaf (all they can bake at one time in their oven), and in the morning he will add sugar and graham flour until he has a stiff batter well beaten. This will be turned into the buttered bread-pan without kneading, allowed to rise quite light and then baked. It is pretty sure to be good every time, for the same cook has gone through the same movements many a time, simply helping his mother, but unconsciously educating himself to be a great help to his father in this emergency, and possibly to himself later in life.

To Make Dried Apples Eatable.

Concerning this fine art there is great lack of knowledge among the people. I don't know the various ways by which they go astray, but I do know that if you have good dried apples, and cook them properly, you may have delicious and wholesome sauce. I have heard of their being cooked in an iron kettle, and of course they were not liked. No rusty tinware is allowable to cook or keep any kind of fruit. Bright new tin, a porcelain kettle, or stoneware may be used. Look over the slices or quarters, removing not only cores, but decaying portions—those that have partially decayed while drying, and are black and of bad flavor. A few such slices spoil the flavor of the whole dish of sauce. If dried apples are not soaked over-night, three hours are not too long to give to their slow cooking. It makes no difference in the result whether they are soaked or not. Dried apple sauce is high in favor in our family. We use a variety of fruit, but none more than apples, in one form or another. Good apples, properly dried, come in well after the season for fresh apples is over. The cook referred to above, expects to cook a gallon jar nearly full of apple sauce at a time, for himself and his father. He will fill the jar less than a quarter full of the washed slices (if you soak them be sure and do the washing first, and then cook them in the same water in which they were soaked), and add cold water until the jar is three-fourths filled. After a time they will swell and threaten to run over, but they may be stirred down and will soon shrink to the original proportion. When they have cooked thoroughly soft, sweeten them with the best of sugar, and boil a few minutes longer. Nothing is better for flavoring apple sauce than good maple sugar. We always use the granulated sugar. We like to cook fruit in an earthen jar because it can be set aside and kept in the same vessel. It never imparts any taste, and is easy to clean. The gallon and half-gallon jars in which my butter often comes, prove very useful about the house, though I can return them when I choose. I have used the stone jars for years, and have never broken one by cooking, unless the fruit, or other contents of the jar, has boiled dry. They cannot bear sudden transitions from great heat to severe cold, or the contrary.

Soaking the Clothes.

I am afraid our inexperienced house-keepers, before referred to, will get into trouble by soaking their clothes too much. I suspect they will often have to use hard water for washing. The boy has seen me soaking the clothes over-night, sometimes lately with the idea that I was gaining time, but I think now that I have usually lost more than I have gained by the operation. A brief soaking in warm suds just before washing is much more effective, I think, than all night soaking in clear cold water. To soak clothes in hard water is worse than useless.

To Prepare Hard Water for Washing.

I cannot find definite directions anywhere, and perhaps no exact rule can be given, since water, with lime as an ingredient, has different degrees of hardness. Some soften a barrel of water at a time, by tying ashes in a bag—two or three quarts for each barrel, I have been told—and leaving this in the water over-night. The same ashes would not do for the next barrel, of course. Others make a white lye by boiling a kettle nearly full of ashes and water. This is added to the hot water in the tub, or, better still, to the water heating in the boiler. In the latter case, as the water heats, a white scum rises, which can be skimmed off, and leave the water clear and soft. Miss Parloa, in an excellent little book, entitled "First Principles of Household Management," gives very clear directions about washing, but concerning the use of hard water she only says "if the water is hard, add a little washing soda or borax." The most expensive way to soften the water is to use borax, but it is the most satisfactory method. It is a great aid in washing with soft water, and whatever is not taken up in softening the hard water, remains to make the cleansing of the clothes more easy and effectual.

Water Filters.—Impure water is perhaps the most common source of those diseases frequent at this season, and known as summer complaints. The hot weather favors the development of those low organisms that only the microscope reveals, but are at the same time very dangerous when taken into the system in any considerable quantities. At this season also water is the most scarce, and it often happens that other than the regular source of water, the well, is resorted to for water for household use. In all such cases, if one is not sure that the water is pure, it should be filtered,

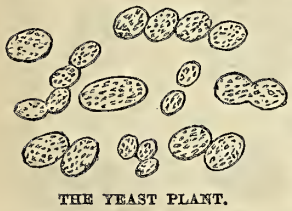
and this can be easily done. Secure a quantity of charcoal and make it fine. Put the charcoal into a flower pot set in the top of a tall jar, and pour the suspected water upon the mass of charcoal. It should be observed that all the water passes through the bed of charcoal, and that not too rapidly. The best way is to have a tall vessel that is provided with a stop-cock or faucet for the drawing off of the filtered water below. But if such a vessel is not at hand, filter the water any way that it is possible; the point is to pass the water through the charcoal that the disease germs may be removed, and thus prevent them from getting into the system.

Yeast: What Is It?

In the process of fermentation of many substances, and in the making of beer, a grayish foaming mass separates and is known as Yeast. When seen under the microscope, this substance is found to consist of countless minute bodies, called cells—some of which are shown very much magnified in the accompanying engraving. These little bodies represent so many living, growing plants, and a globule of yeast that may be held upon the point of a pin is, so to speak, a whole forest of vegetable forms. These plants are very low in the scale of life, as their simplicity of structure would lead one to conclude. The method of increase,—which is very rapid—may be illustrated in the following way: Suppose we have a body like a link of sausage made of thin rubber, and is constantly enlarging in in all directions. After it has grown to a certain size, a string is tied around the center, and the two ends are literally "tied off" by a drawing down of the string, thus forming two little sacs out of the larger one. In the same way the two new cells, or sacs, increase in size, and they in turn are divided into two similar small ones that grow and divide, and so the process continues as long as growth lasts.

This is what takes place with the yeast cells, the time for the growth being very brief, and of course the division is not accomplished with any thing in the shape of a sting: it being self acting—a part of "the nature of the plant" as one might say. All growth, whether it be of the most complex animal, or the simplest vegetable, like the yeast plant, is of this same kind, namely: cell growth and division.

But what is the use of this plant which we have found to be so simple in its structure? It, like every other living thing, grows only when the necessary food for its consumption is at hand, and as it grows it produces certain changes in the substance upon which it feeds. It is in these changes



THE YEAST PLANT.
(*Saccharomyces cerevisiæ.*)

—or the power to produce these changes that its value in the household lies. As the yeast plant grows, it decomposes its food, and, among other things, causes the escape of a quantity of carbonic acid gas; in other words it produces a fermentation. The most common domestic employment of fermentation is for the raising of bread. The yeast is added to the dough in the early stage of bread-making, and as it furnishes all the elements for the growth of the yeast plant, that soon begins to grow, feeding on the flour, at the same time producing a quantity of carbonic acid gas. This gas tries to escape, but is held in by the tenacious dough, and thus becoming filled with the forming gas, the dough is made light, and, in baking, the gas is still more expanded, making it, when baked, a healthful article of food. This yeast plant may be dried without losing its life; and as such it is a common article in the market, in the various forms of yeast. The "Indian Yeast Cakes," extensively used in the country, are composed of the yeast plant, dried with a mixture of Indian meal and an infusion of hops. Whatever be the substance used, the end is the same; the development of a fermentation to produce an evolution of gas for raising the dough, and thereby making the bread light and wholesome. It is then a little microscopic plant of the fungus group that does so much for our comfort and health, and even though some of these low plants are our worst enemies, we must not forget our friends.

A Summer Lamp Shade.

Even lamp shades have their times and seasons. In a large city the coming and going of different wares presents a subject for the study of the curious. Take this Lamp Shade as an example. About a fortnight ago, in passing a large lamp store, our attention was arrested by the display on some lamps in the window, of a shade that struck us as very pleasing in appearance. Soon after we saw in the window of a "fancy store" a lot of the shades of various colors. A few days ago we went to one of the principal stationers on some errand and found a great lot of the shades there, and were informed that they were "all the rage." To-day we had the latest evidence of their popularity in the appearance of salesmen upon Broadway with baskets of the self same shades. The shade is in itself re-

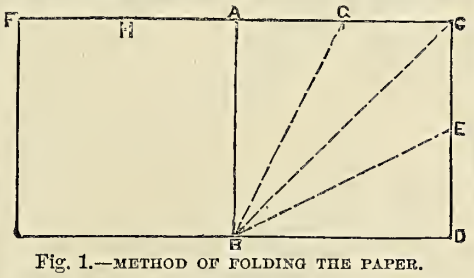


Fig. 1.—METHOD OF FOLDING THE PAPER.

markably pretty, exceedingly cheap, and not difficult to make. It is best suited to lamp shades of a globe-form, though it will answer for others. The material is tissue paper, which may be had in any desired color. To make the shade a square piece is required, a whole sheet or a half, according to the size of the lamp-globe. First fold the square piece once, which will make a fold twice as long as wide, as in figure 1; then crease this in the middle, *A, B,* which will divide it into two small squares, *A, B, C, D.* Begin with one of these squares, that at the right hand, fold *D* over to *A,* and it will give the crease *B, C;* then fold *B, D,* over upon the line, *B, C,* and it will give *B, E.* Next carry *D* over to a point half way of the upper edge of the next square, to *H;* this will give the line, *B, G.* The folding is to be done in such a manner as to make a sharp crease each time. Having creased the right hand square, as shown in figure 1, treat the left hand one in the same manner, beginning with the fold from *B* to *F.* When this is done, turn the paper over and fold between the present creases, in the opposite directions; this will have the effect of folding it like a paper fan. When the folding on this side is finished, the whole will appear like figure 2. Now carefully open the whole, and you will have a funnel-shaped plaited affair—which is to be held by the center and carefully drawn through the hand several times, increasing the pressure upon the paper each time; this is to fill the paper with innumerable irregular creases, and to give to the shade that peculiar crimped, crape-like appearance that constitutes its special beauty. When completed, the shade appears as in figure 3. When used, the top or point is to be cut away sufficiently far down to give an opening of the required size to fit it to the lamp-globe. The shade in use is shown at figure 4. It has a beauty quite remarkable when we consider the simple means by which it is produced, and it is useful as well as beautiful; the lamp adding greatly to our personal comfort.

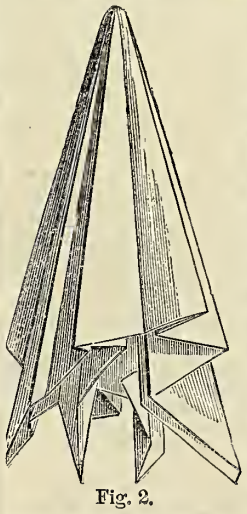


Fig. 2.

Progress in the Kitchen.

To the old housewife in her declining years, perhaps nothing is more amazing than the great changes that have taken place in kitchen furniture, and methods of doing cooking, etc., since she was a girl, fifty or sixty years ago. Our grand and great grand mothers with a crane, some pot-hooks, and a brass-lined skillet or two, worked over the blazing open fire-place, until their faces were almost as red as the fire itself. They did not dream of the perfect range of the present day, in which the heat is economized, and only allowed to cook that which ought to be cooked. When baking was to be done, a great fire had to be built in a great oven, and after the bricks were heated, the fire and ashes were removed, and the bread, cake, etc., placed in, after the proper temperature had been obtained. Now everything is so nicely arranged, that without getting overheated, the cook can do her work, and not a particle of smoke need escape into the room. Instead of the brass kettle with its constant scouring to keep it clean, we have the tin or porcelain lined stew-pans, kettles, etc., which to keep them clean only require the simplest of washing and wiping. At the present day, there is a handy little utensil for the doing of each of the simplest things in the kitchen—a list of which would be a long one. From the flour sifter, through all the processes of bread-making, to the handy toaster, everything seems complete in labor-saving aids and helps. Contrast the safe hanging lamp, with its abundant and cheap light, with the miserable tallow dip of a half century ago, which the woman made herself, and was constantly snuffing that it should not go out in smoke. Even in the matter of wash-day appliances, etc., the contrast is fully as great; instead of the old pounding, and hand-wringing, the whole work is done by machines that are easy to run, and do the work quickly, and in a thorough manner. With all the inventions and vastly superior methods of doing the work of the house, are our soups, and breads, pies and sauces, much better than those our grandmothers made?—They may not be, but the time spent in making them is shortened. They gave their minds, and too often we may add with regret their bodies, to the work of the kitchen, while with the same house to keep, the woman of to-day can spend a portion of her time in the library. The cook-room may be "a laboratory, where a fine chemistry can transmute grain cells and meat fibre into the fuel of a finer flame, the support of a richer flesh and blood, abler and stronger to do, than flesh and blood were of old." In the material progress of the age, the means for lightening the labors of the kitchen, as well as the various duties of the household have not been forgotten, and this is as it should be.

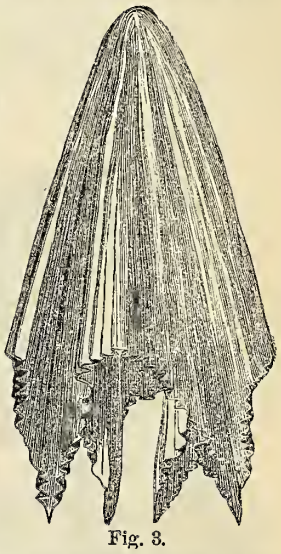


Fig. 3.

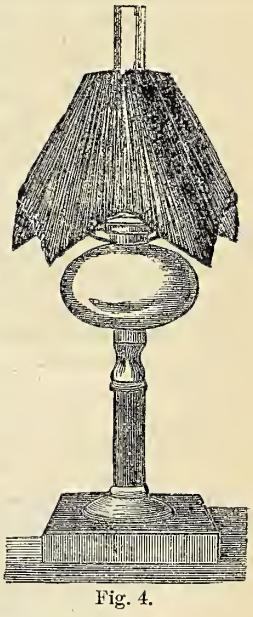


Fig. 4.

BOYS & GIRLS' COLUMNS.

The Doctor's Talks.

Some boys have asked me to tell them how to make a Balloon. I wish they had reminded me of it sooner, as I might have talked about it last month, and you could have had your balloons ready for the Fourth of July Celebration. I believe in balloons for the 4th.

BALLOONS AND CHINESE LANTERNS

are a great deal better than crackers and fire-works to celebrate with. They do not cost so much to begin with, the lanterns will last from year to year, though I must admit that balloons are not very lasting; to be sure they are not dangerous, and do not make a bad smell, but we shall by and by learn to show our patriotism without

Fig. 1.—STARTING THE BALLOON.

either burnt powder or burnt fingers. In former times people used to always speak of them as Air-Balloons. I recollect that when I was a mere youngster, I heard some old people talking about an *abaloon* that was to go up at some place, and I was in great mental distress to know what the wonderful thing might be, until I could reach home and have it explained that it was an Air-balloon that was discussed. You may think that these "Talks," where we have been trying to look into the why and wherefore of various things, is not the proper place for 4th of July and balloon talks.

WHY DOES A BALLOON GO UP?

we might answer this by saying that all balloons do not go up, and none will do so unless certain laws that we have been talking about are observed. We may look upon a balloon as a mere toy, to afford amusement, or as a piece of apparatus for illustrating some of the facts of science. I do not know why we can not regard it as both. If you wish a body to rise through the water you know that it must weigh less, *i. e.*, contain less matter than the same bulk of water. For a body to rise in the air it must weigh less than the same bulk of air. We have not yet had much to say in our Talks about Air and other gases, but I suppose you all know that air has weight. If a vessel holding 100 cubic inches with the air thoroughly taken out of it, is weighed, and then the air is let into it, and the vessel is again weighed, it will be found to be heavier than before by 30 grains. That is the average weight of the air—100 cubic inches weigh 30 grains. If we imagine a column of air one inch square at the earth, and reaching, of that size, all the way, as far up as the air extends, which is supposed to be about 100 miles, that column would weigh 15 pounds. A balloon then must in the first place be of very light material, and then must be filled with

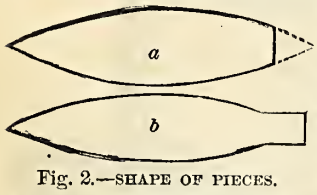


Fig. 2.—SHAPE OF PIECES.

SOMETHING LIGHTER THAN AIR.

The lightest gas known is Hydrogen—that is about 14 times lighter than air, and is on some accounts the best for filling balloons, and has been used a great deal for that purpose. But there is another law that prevents it being the best material for balloons, and that is the law of diffusion of gases—sometime I may talk to you about this; suffice it to say that gases of unlike weights, when separated by a porous partition, tend to mix; the heavy gas passes through the partition into the lighter one, and the lighter gas passing into the heavier one—and the lighter gas will pass through as much quicker than the heavy one, as it is lighter than that. So it is very difficult to hold hydrogen in a balloon. For this reason, and for its greater cheapness, illuminating or street gas is generally used, and as this is several times heavier than hydrogen, the balloon is made larger. But

IN THE FIRST BALLOON,

neither of these gases were used. The first balloon that was made did not go very far. It was of silk, had square sides, and went only up to the top of the room. When hydrogen gas was first discovered, it was tried in paper balloons, but they would not hold it. Two Frenchmen, brothers, named Montgolfier, were paper-makers. They tried hydrogen, and it would not work; then they tried to invent another gas by burning wool and straw, and that did answer. But it was not the gas from the straw and wool that made the balloon ascend. In burning these, the air was heated, and as a given bulk of hot air is lighter than the same of cold air, the first that went up was a hot air-balloon, though it was then thought to be due to the gas from burning wool. In making a balloon for our purposes, we use paper and hot air. We will not give any more of the early history of balloons, but go on

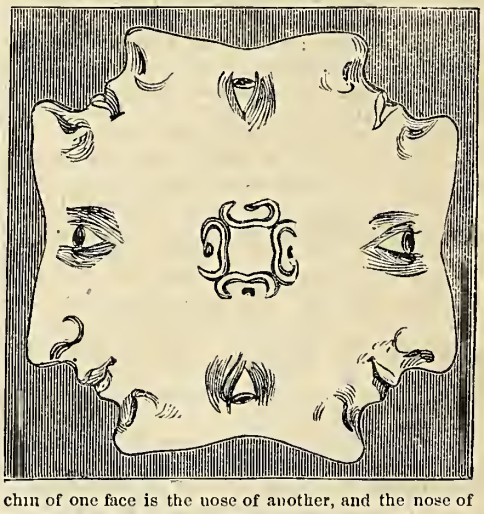
WITH MAKING THE BALLOON.

The materials needed are Twine, Paper, Flour-paste, and a brush to put it on with, a piece of willow or rattan for a hoop, a few feet of fine wire (copper is best, but iron will answer), some bits of sponge, and a few ounces of alcohol. Besides you will need a lot of old newspapers and some patience and skill. The sheets of tissue paper are 30 by 20 inches. As neither of these lengths is enough for a good-sized balloon, they should be pasted together, two sheets joined by their shorter sides, will make strips 60 by 20 inches. Our balloon, fig. 1, if 60 inches high, will, if a globe, be 180 inches in circumference, that would require 9 strips, but as we do not want it to be quite globular, and an even number of strips, as we shall presently see, are required, 8 pieces will be better. We shall want, then, 16 sheets of tissue paper. It will be safer to have a few extra sheets to make repairs in case of accident. The balloon may be all of one color, but it will look better of two, white and blue, or white and red are the most pleasing; or all three may be used, three strips each of red and white, and two of blue, or three each of white and blue, and two of red. In procuring the paper, see that there are no holes in it, or, should any be discovered, they must be stopped by pasting a small piece of the same paper over them. Use well-boiled smooth flour paste; it is a great deal better than gum, which dries hard and will crack when bent. Paste the sheets together in pairs, lapping them about half an inch. When these are dry you will be ready to cut out to the proper shape. If the balloon is to be a globe, the pieces will be of the shape of fig. 2, *a*, each with the end cut off to form the mouth. But a pear-shaped balloon is handsomer and easier to manage, and I think altogether better. For this the pieces have the shape given in fig. 2, *b*. If there is any rule for cutting out the parts or gores, I do not know it. In talking about making a balloon, as in many other matters, I have to go back a great many years, and, as a sailor would say, "overhaul my memory." Indeed I found that there were so many points about making the balloon, that I could not recollect about, that I went to work and made one, in order to be sure I was right. To get the right shape, then, for the parts, take a piece of paper, 60 by 20 inches, fold it lengthwise, and mark out a pattern. When it is to your liking cut it out, and use it to cut the tissue paper by. If you have large and sharp shears, all 8 pieces may be cut at once; otherwise you must cut fewer at a time. Next comes the most difficult part, the pasting. Take it easy, and don't get hurried or fussy over it. Tissue paper, when wet with paste, is very delicate and frail, and will tear very readily. Be careful with the paste, and should any get upon the paper where it is not needed, wipe it off gently with a cloth, and let the place dry before another piece of paper is laid upon it. Having arranged the pieces as you wish the colors to go, you will begin to paste. Lay down a piece of the tissue paper, then lay another upon it, with its edge half an inch within the edge of No. 1. Put paste upon this projecting half inch of No. 1, and turn it over and paste it upon No. 2, begin at the curved part, the top of the balloon, and paste the edge over a few inches at a time. When the whole edge has been pasted, lay piece No. 3 upon No. 2 in the same manner, half an inch back from the edge. If the pasted edge of No. 1 was from you, that of No. 2 will be towards you; this being done, lay No. 3 on No. 2, and paste in the same manner, and go on until all are pasted together. When you have pasted the last, No. 8, you will have your balloon, folded like a fan, with alternate edges, in and out. Now comes the most difficult part, pasting the last edge—pasting the edge of piece No. 1 upon that of piece 8. By bending the other folds out of the way, you can, without much difficulty, paste the edge from the top down to the widest part, about a fourth of the way; then stop and let it dry—being sure that all the pasting is perfectly dry, you then unfold the balloon, *i. e.*, take out the plaits. Now take a piece of cloth of some kind, glazed cambric or calico is best, cut out a circular piece about 2 inches across, and put this on the inside, where all the pieces come together, when that is dry, paste a similar piece of tissue paper on the outside. Now having the balloon unfolded, you will find but little difficulty in closing up the rest of the last seam. Let that dry, and by means of a large needle you can put a strong thread or small cord through the piece of cloth in the top, and make a loop to hang it up by. When hung up you can put in the hoop; this is to be as light as possible; a small willow, split if not small enough, a split rattan or whatever is most convenient to make the lightest possible hoop. Cut the mouth of the bottom even, and put in the hoop, pasting the edges of the paper over it. Stretch a very fine wire across the hoop in two directions and the balloon is done.

TO SEND UP THE BALLOON.

Before starting out, see that there are no parts of the balloon that stick together, and that all the folds are out. You will need two bits of sponge about the size of English walnuts. One of these should be securely attached to a fine wire about 6 inches long. The other sponge will need no wire, but an old tin or other plate will be well to hold it. Of course you will need your small bottle of alcohol. Let one stand on something that will allow him to hold the balloon well up from the ground. Wet the loose sponge with alcohol, not to drip, put in on the plate and set fire to it, holding the balloon over the flame so that the hot air will rise into and inflate it. As soon as the balloon will support itself the one who has held it by the top lets go and leaves it in charge of those below. One now wets the wired sponge with alcohol, quickly fastens its wire to the cross wires of the balloon, having it well away from the burning alcohol while doing it. As soon as secure, light the alcohol on the sponge on the balloon—hold on a second until you feel sure that it will go—then let her sail. It is very easy to do but it takes a long while to tell. In sending up a balloon, select a place where there can be no danger to barns or other buildings should it fail to go up, also a place where the balloon can not be caught by trees or otherwise before it gets above them.

Picture Puzzle.—How many faces are there here is a question that many will ask when they see this odd looking picture. Our artist sometimes gets a strange notion into his head, and don't you think this is a-*head* of anything in the way of a combination of heads? The



chin of one face is the nose of another, and the nose of the other is the forehead of the one, and so on all around the picture. What a funny looking person he would be that had such a combination head. It might be good for a school teacher, as he could then look in all directions at once; and again, what a singing school such a head man would make!

Our Puzzle-Box.

DROP-LETTER WORDS.

1. —b—t—m—o—s.
2. —o—o—r—p—y.
3. —r—g—n—t—r.
4. —u—e—t—e—t.
5. —r—t—r—i—y.
6. —u—m—d—e—n.
7. —e—m—t—c—s.
8. —e—u—e—a—e.

OPPOSITES (*Geographical*).

(*Example—Keep still.* Answer—*Rome.* If you *roam* you don't *keep still.*)

1. Back sea.
2. You are indebted to B.
3. Wide-awake solid.
4. Johanna's daughter.
5. Brother, you speak truly.
6. Shortcoming.
7. An unhappy vowel.
8. No pear.

ADOLPH M. NAGEL.

MIXED PROVERBS.

(In the following sentences are five well-known proverbs, displaced. Transpose the words and make the original proverbs; every word must be used.)

Where's the mother of brevity?
There's a time for wit and invention.
The soul is no light necessity.
Many a man will wait.
Hands make way! There's tide of work.

DOUBLE ACROSTIC.

The initials name a well-known bird, and the finals, an animal

1. An oriental tree.
2. A man's name.
3. An ingredient of plum cake.
4. One of the tortures of the Inquisition.
5. A fruit
6. A country in Europe.

EFFIE.

CHANGED HEADS.

(Change the first letter each time.)

1. First take a certain arrangement of rope; then change its head and make
2. Something very useful in carrying Saratoga trunks to the fourth story.
3. Again change the head and make something without which
4. Would be of no use.
5. A person.
6. A bad thing to get into.
7. What every freeman has.
8. Compact.
9. A number.
10. "Good night."

CROSS-WORD.

My first is in rampart but not in defence,
My next is in income but not in expense,
My third is in ocean but not in the sea,
My fourth is in coffee but not in our tea,
My fifth is in pitcher but not in the jug,
My sixth is in tumbler but not in the mug,
My seventh is in fragment but not in a rag,
My eighth is in satchel but not in a bag,
My ninth is in cricket but not in grasshopper:
My whole is a mixture of zinc and of copper.

PI.

Heret saw cone a codort, how, nhew saked thaw saw dogo rof quotessimo, tower cakb: "Who od ouy pupesso I nac letl sunsel I wonk thaw sail het quismoot?"

NUMERICAL ENIGMAS.

1. I am composed of 28 letters:
My 15, 20, 2, 3, 12, are certain birds.
My 3, 8, 7, is a kind of sauce.
My 16, 9, 2, is clamor.
My 18, 25, 8, 4, 3, 27, 21, 28, is a number.
My 11, 14, 15, is to dress.
My 17, 19, 23, 21, 22, is a leather strap.
My 13, 12, 1, 10, 17, 6, is abatement.
My 5, 24, 11, 26, is scattered.
My whole is very excellent advice. MARY A. E.

2. I am composed of 18 letters:
My 13, 14, 9, 15, 5, 16, is a body of troops.
My 17, 1, 8, 16, 4, 18, is a number.
My 5, 6, 15, 3, 2, is an animal.
My 12, 10, 7, 11, is to mend.
My whole may be found on the map of Pennsylvania.
JOHN M. M.

TRANSPOSED PROVERB.

(Readjust the letters to form the proverb.)
He is bent to copy his style.

METAGRAM.

In a word of five letters you may find three verbs, four nouns, two pronouns, a preposition, an adjective, an article, and an exclamation; among the nouns are a fish and a tree. What is the original word, and what are the different words formed from the five letters.

ANSWERS TO PUZZLES IN THE MAY NUMBER.

CHARADES.—1. Dilemma. 2. Meuhaden. 3. Driftwood.

NUMERICAL ENIGMAS.—1. Honesty is the best policy. 2. The Lord is my Shepherd, I shall not want.

ALPHABETICAL ARITHMETIC.—1703)95482640(56067. (*Key*—Large Knobs.)

DOUBLE ACROSTIC.

Sing—Song.
S—paciou—S
I—ntagli—O
N— atio —N
G— an —G

ANAGRAMS.—1. Contumacious. 2. Asseverations. 3. Potentates. 4. Superscribed. 5. Validity. 6. Predetermined. 7. Archbishopric. 8. Foreshadowing. 9. Metropolitan. 10. Greensward.

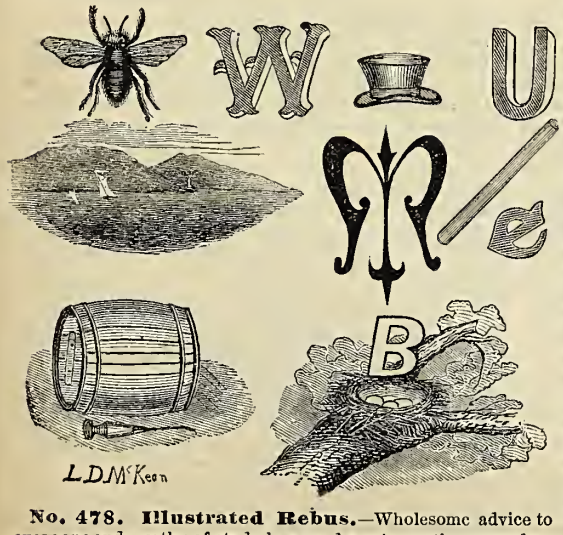
DECAPITATION.—Wheat, heat, eat.

CROSS-WORD.—Misfortune.

PI.—A remark of Patience Reville is at once luminous, monitory and timely: "Respect the embarrassment of any honest conscience which doubts, which seeks, which likes better to rest in what is vague, and even to contradict itself, than to disfigure the unknown truth by giving it features fixed and perhaps unfaithful."

METAMOREMS.—1. Yawn. 2. Beryl. 3. Long. 4. Forty. 5. Home. 6. Villain. 7. Convex. 8. Alcohol. 9. Bread. 10. Clay.

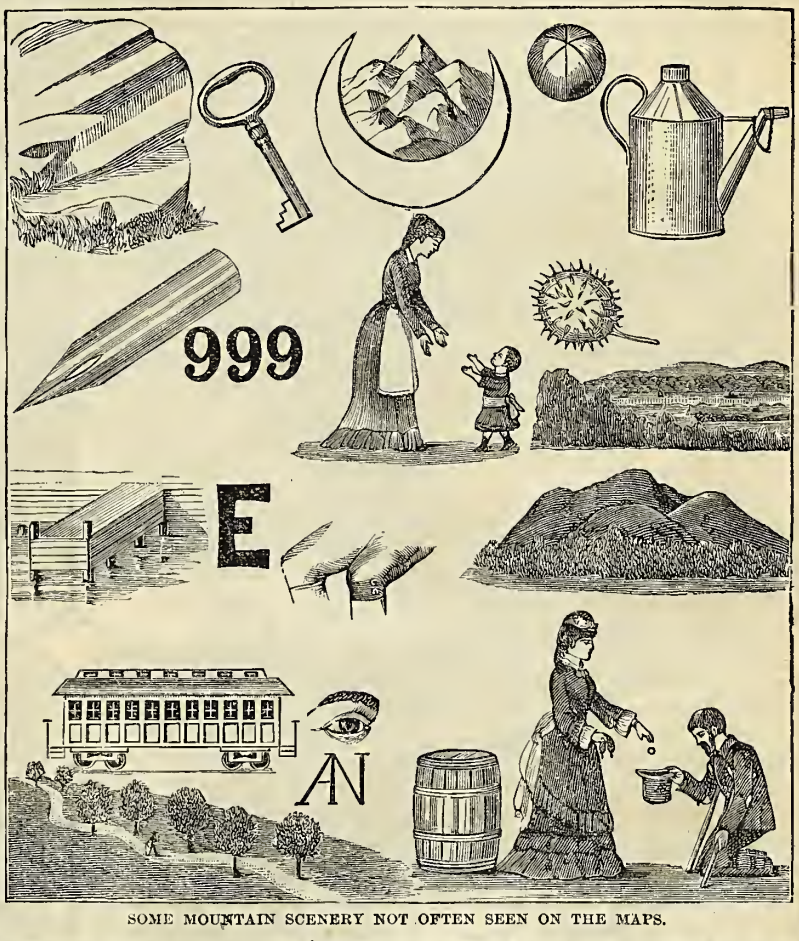
ILLUSTRATED REBUS, 476.—Accumulate information and increase wisdom, but above all acquire integrity and honor.



No. 478. Illustrated Rebus.—Wholesome advice to every one and worthy of study here, and much practice every day.

A Trip Over the Mountains.

The River Hunt, judging by the many letters from our readers, old as well as young, was a pleasant and perhaps an easy journey. With the warm weather upon us, it will be just the thing to change the direction of our rehus wanderings, and "take to the mountains," in the hope that a trip over some of them will refresh us in more ways than one. There has been quite an excitement over No. 1 of late years, especially among those men who are anxious to go into new mining regions where it is hoped that a vast amount of gold and other precious metals can be found. Among these mountains (which, by the way, are not called mountains), the Indians have frequently made much trouble, so that at times the miners' lives were in danger. There are very few boys and girls in these mountains, and perhaps we had better hurry away before we meet with any mishaps.—Let us now take an imaginary flight,—suppose ourselves carried across the seas—to a foreign land, a peninsula, and a peculiarly-shaped one at that. These mountains (No. 2) are not of great hight; the highest points being about 10,000 feet, or nearly two miles. None of the peaks of the range are covered with snow and ice the year round; there is here no point of perpetual snow, such as we may find before we reach home. Where these mountains come near the coast of the great sea, their sides are remarkably high and steep. Two famous volcanoes belong to this range, about which volumes of interesting things have been written.—Leaving these mountains, and journeying by foot, or perhaps better, by rail, for a number of hundred miles, we will come to No. 3—a range which encloses a country like a great hoop, or semicircle rather, on its north and eastern boundary. One of the peaks is so high, and the region of these mountains so cold that there is a glacier or river of ice which runs—of course slowly—down the mountain side and melts in the warm valley below. These mountains are mostly clothed with woods for half the way up, after which are mostly rocks and snow and ice.—No. 4, from the name, ought to be 240 thousand miles away from the earth, but they are only a small part of that distance from us. It is a considerable of a tramp to go to them, though, and they are in a land that is not very well known. It may be because they have been so little explored that they are named as they are. We can not be expected to be very familiar with mountains that no one else knows very much about.—No. 5 is a range that separates two great countries, which have been quite closely associated at certain times in the history of the two nations. The mountains consist of two distinct chains or ridges. The slope on the northern side is gradual, and covered with fine pastures, but on the south it is frequently very steep. Many parts of the mountains are of sufficient hight to have their heads covered night and day and all the year round with white caps of ice and snow. There are as many as a hundred *passes* or places through which persons can go from one side of the mountains to the other—from the country on the north to the more sunny land on the south.—No. 6 runs almost parallel with a great river, and is situated in the central portion of a great country, the name of which is perhaps most familiar to young people—and old folks too—about Thanksgiving time. In going from the capitals of two large countries, a traveller would go through one of the few passes in this mountain range.—As we return to that portion of the face of the earth—what a wrinkled face! Mother Earth must be very old—where most of our young readers live, we come across another range of mountains, and find our No. 7. There are a number of neighboring chains which run in much the same direction which we will not consider. A large river of the same name runs among these mountains, and afterwards flows into the longest river in the world.—No. 8. If we return to somewhere near where we started—at least the nearest to No. 1 since we left it to take a mountain tour of the world—we shall find a long and very difficult range to climb, but one which would bring us far into the upper air, because it contains some of the highest peaks in the world. But we can not stop to go the whole length of this chain, for we have one more, and that the most important in size that we have found. It is not far from where we started, and its name can be easily made out from the map which illustrates the subject. We hope that the hasty journey—flying trip we might call it—has not made you so tired on these warm July days, that you may not wish to go with us again.



SOME MOUNTAIN SCENERY NOT OFTEN SEEN ON THE MAPS.

Something About Glass.

Some boy writes to "The Doctor," asking how window glass is made so flat and smooth "especially those in the large windows of store fronts." There are two kinds of window glass, one called "cylinder" and the other "plate"-glass. All the large panes are plate-glass, as the size of cylinder glass cannot be increased beyond a certain point. In this kind of glass a cylinder is blown; those who have been in a glass house—and I advise all of you, whenever you have an opportunity to visit one and see how this wonderful material is worked—know that to make a cylinder, a globe is first blown. This is then worked into a cylinder, by rolling it upon an iron table; after the cylinder is made its ends are cut off, and it is divided lengthwise and flattened out to form a flat, smooth sheet. All plate glass is cast; a polished iron table has ledges at the sides, as high as the thickness of the plate of glass. The melted glass is poured upon this and spread and flattened by a copper roller. The plate is then annealed; that is, put into a very hot furnace, which is so arranged that the glass will cool very slowly, in order that it shall be tough when at the end of a week or so it is cool. But the glass is now dull and rough, like that which you see in roofs and sky-lights. To become the beautiful plate-glass it must be ground and polished. The plates are so arranged that they may be rubbed together, one upon the other, by machinery. First sand and water are placed between them, then emery of different sizes, and after being ground with the finest emery, they are polished by rubbing them for some time with some kind of polishing powder.

The Day We Celebrate.

If there is any day in the year upon which the average Young American does not have to be instructed as to the time of its coming, that day is Fourth of July. The very air we breathe from the day we are born fills us with the spirit of the Independence Day. The coming "Fourth" reminds me of one in which I took an active part some years ago, and one, though without any striking events, that my memory has not allowed me to entirely forget. We knew it was coming, and when I say *we*, three young farmer lads—no more and no less—are included. The almanac had been looked at more than once to see how time was progressing, and we fully agreed with it when it said all along through May and most of June that the days were getting longer. They seemed longer and longer even up to the very day of the celebration—and that opened early and closed late. What fun it is to get ready for any unusual "doings"; and when you add to it the happy thought that not a soul knows anything about it except the few companions of your choice, how full of real, solid, silent delight the little youthful heart must be. For this particular occasion we had come home early from school, and done extra work for weeks for the money we should get, or, to look beyond the cash, the sport that our toil would bring; all of us were glad to get an errand from any one who was "good pay"; and they all, as I look back now, understood the motives which led us to such an outward show of industry.

It was not later than the middle of June that we formed ourselves into an investigating committee on fire-works, and visited the neighboring village in a body. How we did look at those store windows where fire-crackers of all sizes and colors were displayed to catch the eye, and finally the pennies, of just such investigating committees as mentioned above. We bought our things at one time or another as the funds came in; but we were so patriotic that we all concluded to buy of Postmaster M.; first, because he had been a soldier and had lost one leg, and secondly, his stock of goods appeared to be the best. Our pyrotechnics (a pretty big word for fire-works), as fast as purchased, were by common consent stored in the loft in the barn. It may be that we had an idea that nobody knew anything about what was going on, and we wished to "keep things hid." This storing of fire-works in the hay in the barn is just the wrong thing to do, and if any young reader is led to do the same thing through my experience, I shall wish I had forever kept still on this point. Whatever you do, remember, as I did not, that barns are costly, hay is easy to set on fire, and fire-works are still easier to burn, and then the temptation is so great that some thoughtless boy may touch a match to that which will make a funny noise when it goes off.

The artist has helped me to show my nieces and nephews, how things looked the day before the Fourth when the *Celebrators* were gathered for the last time to look at the purchases, see that they were all there and in good shape, and also to make plans for the morrow which had been so slow in coming. This was the joy of anticipation, but with it was mingled that stillness that the time and place demanded. Of course we went to bed in much that fevered state of mind and body that thousands of boys all over the land will do this year; and passed as long and sleepless a night as boys always do on July 3d. The morning of the "4th" was a fine one, and the sun rose without a cloud—the first sunrise we had seen for some time. The second scene lets the young readers into the activities of the early morning, but of course it can not show the noise that was being made, or express the utter surprise of the dog to see us out so early in such a peculiar and excited state. It was not our intention to make a quiet day of it, and we started out accordingly. We broke the silence of the morning, and our secret planning for weeks was exposed, with loud reports of small cannon and other fire arms. We had an audience at the window so soon as the exercises began. The firing was kept up until we concluded that the day had been well opened, and after taking a late and large breakfast we concluded to let matters rest until the heat of the day was over, and under the cover of darkness resume the exercises, as a better showing might then be made. Night came after we had had a day at fishing in the brook by the woods, where we had more bites from mosquitoes than anything else. The third scene gives an idea of how we finished up the day, and by the looks it might be supposed that the Celebrators were pretty well used up too. The hand that fired the overloaded cannon had been lamed, and was withdrawn from active service. The eye that had too closely watched the spattering and treacherous fuse had been dimmed, and was cut off from the outside world by a bandage, wet in cold water. But so sure as there is a "Fourth" there is a *fifth* to follow, and in our case it came altogether too soon. The fourth scene shows to some extent how we felt at that moment when a near relative called at our room to see what had become of the young hands that were accustomed to help him in the field during the morning hour before school. We looked tired, and we felt worse. The boy with the sore head, and the one with the lame arm, were the last to rise and the slowest to acknowledge that, after all, the Fourth of July was the hardest day that they had seen for just a year. As I look back to that morning, tired, sleepy, stiff and sore, I have to wonder at the seeming absurd way we, as American lads, show our love of country. Why is it that the young mind can not associate a more quiet time with "the day that our land was made free: " Whatever may be the truth of the case, the boys and girls will continue to celebrate the Fourth, and the dull, aching, Fifth will follow to remind them, as it did me, that the freedom the day allowed, leads into bondage, because I was bound with a towel. UNCLE HAL.

THE BOYS' "GLORIOUS FOURTH," AND WHAT IT BROUGHT FORTH.

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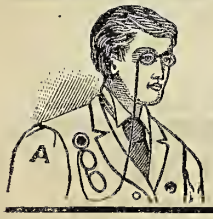

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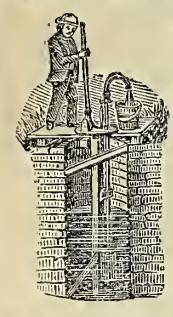

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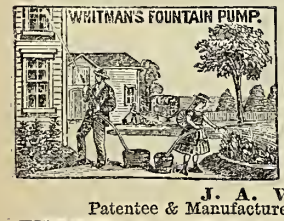

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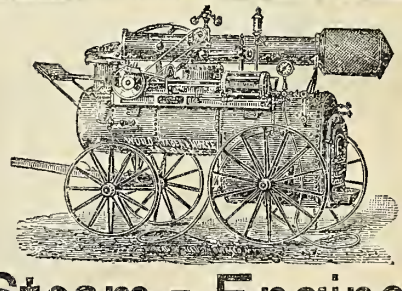

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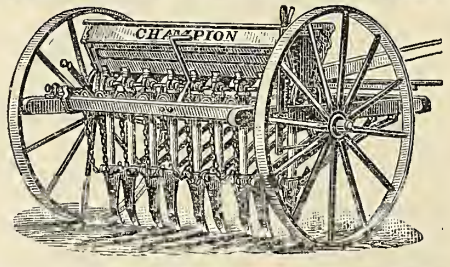

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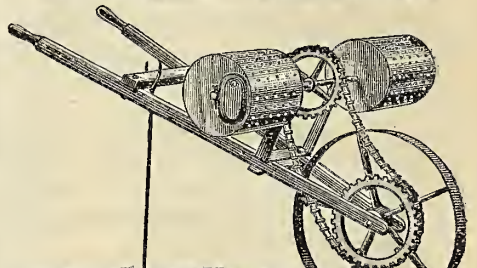

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The Original Premium Bone Fertilizer is now manufactured on a large scale at Alliance, O. It is made from best bone stock and is warranted Pure.

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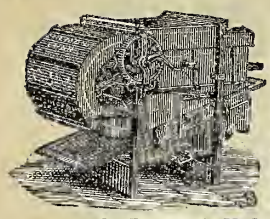
The "Centennial" Fanning Mill.



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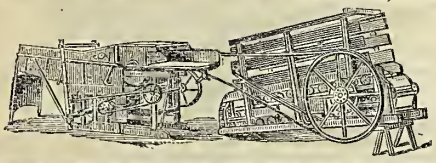

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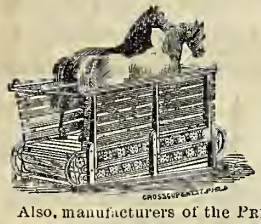

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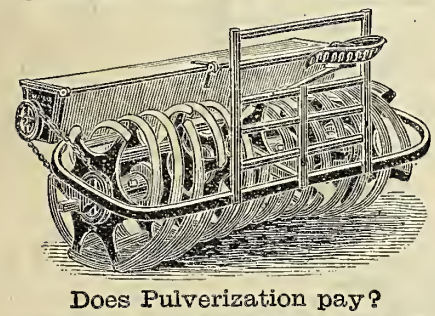

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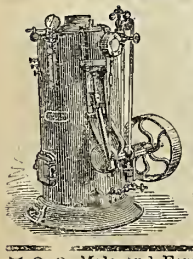

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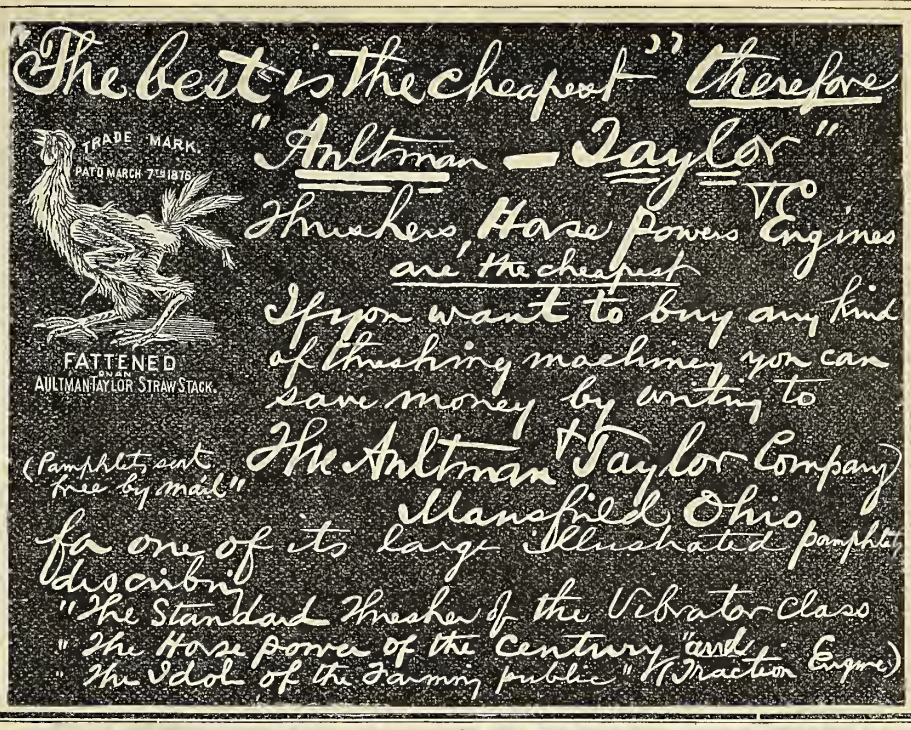

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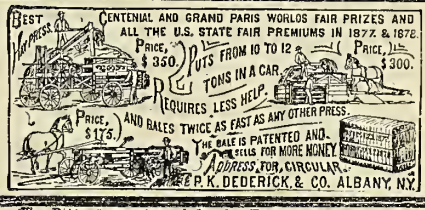

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NOTORIOUS as the **only** machine that is a **success in all kinds of threshing** and a **failure in none.**

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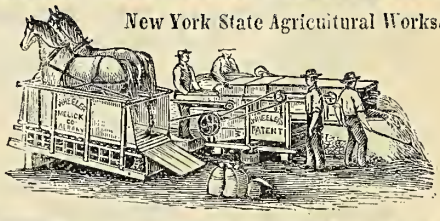

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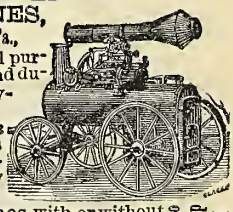

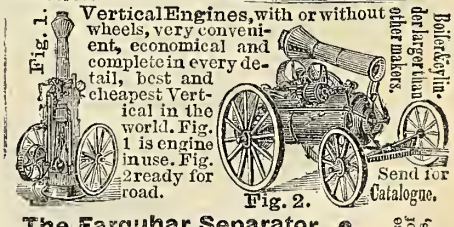

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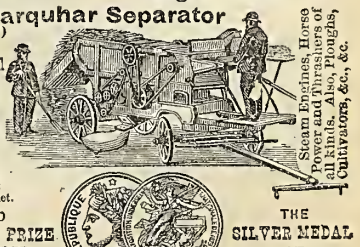

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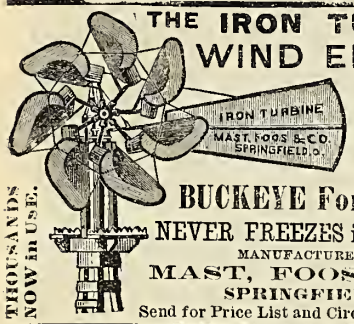

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17 Sizes—1 Man to 45 Horse Power.
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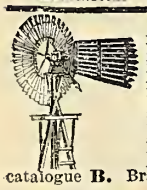

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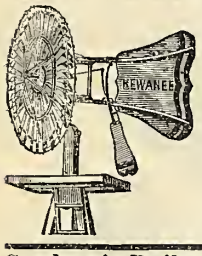

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Any person can set them up.
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Consisting of Carrier, Grappling Fork, Pulleys, and Hooks. For unloading Hay, Grain, Beans, Corn Stalks, loose or in bundles, etc. Can be used in any barn. Also, Improved Stacking Apparatus. Send for Circular, and get valuable information.
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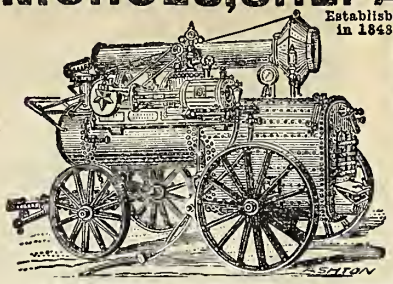

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Threshing Machinery and Portable and Traction Engines.

THE STANDARD of excellence *throughout the Grain-Raising World.*
MATCHLESS for Grain-Saving, Time-Saving, Perfect Cleaning, *Rapid and Thorough Work.*
INCOMPARABLE in *Quality* of Material, *Perfection* of Parts, *Thorough* Workmanship, *Elegant* Finish, and *Beauty* of Model.
MARVELOUS for *vastly superior* work in *all kinds* of Grain, and *universally* known as the *only* successful Thresher in Flax, Timothy, Clover, and all other Seeds.
ASTONISHINGLY DURABLE and *wonderfully simple,* using less than one half the usual gears and belts.
PORTABLE, TRACTION, and **STRAW-BURNING STEAM-ENGINES,** with special features of Power, Durability, Safety Economy, and Beauty entirely unknown in other makes. Steam-Power Outfits and Steam-Power Separators a specialty Four sizes of Separators, from 6 to 12 horse-power; also 2 styles Improved Mounted Horse-Powers.
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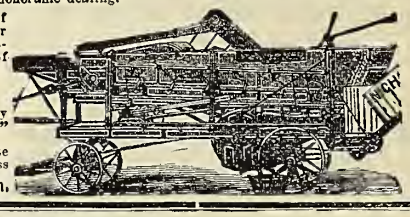

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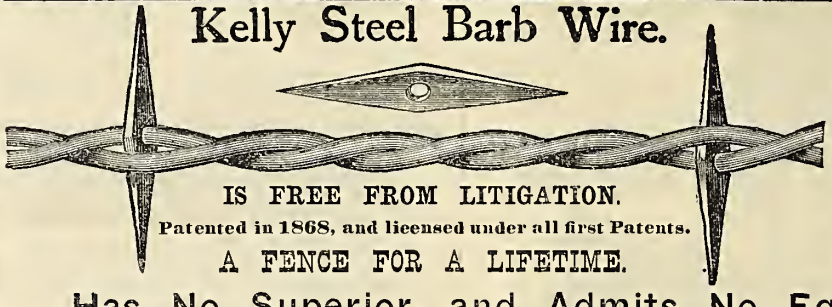

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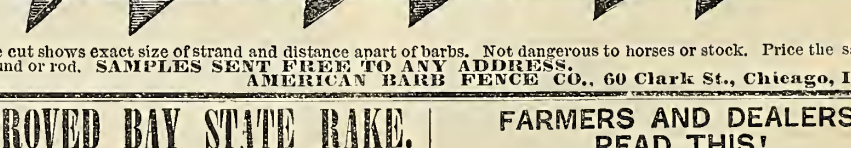

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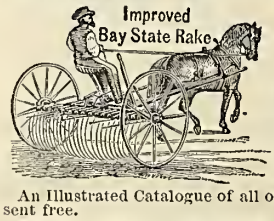

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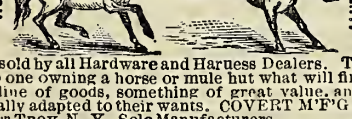

Are sold by all Hardware and Harness Dealers. There is no one owning a horse or mule but what will find in this line of goods, something of great value, and especially adapted to their wants. COVERT M'F'G CO., West Troy, N. Y., Sole Manufacturers.

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This apparatus has given such universal satisfaction for the last three years, and they have such confidence in its perfect adaptation to the wants of all dairymen, that they freely offer to send one to any reliable party, of such size as they need, on 30 days' trial. If it does not work satisfactorily it may be returned.

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Particular attention is called to the fact that the Creamery can be used with either ice, running spring water, or cold well water, and that it is especially useful in cold weather. After a person becomes accustomed to it, they will be able to use it nearly the whole year without artificial cooling, by taking advantage of the cool night air, according to the directions.

No other Creamery is offered on such liberal terms, and no dairyman in justice to himself, and to his wife (for they are especially adapted to dairies where women do the work), should buy any apparatus until he has given the Bureau Creamery a trial.

They also offer to send their Concussion Churn on the same terms.

Messrs. Wells, Richardson & Co., the well known manufacturers of the Perfected Butter Color, are largely interested in the Ferguson Manufacturing Company, and we have their guaranty that all the business of the Company will be done in the most honorable manner.

We advise all our readers in want of milk setting apparatus to correspond with the Ferguson Manf'g Co., Burlington, Vt.

TESTIMONIALS.

CORNWALL, VT., *May* 21, 1880.

THE FERGUSON MAN'F'G CO.—*Gentlemen:* You ask for my experience with the Bureau. We have used one for the last two years, and so far this.

We are perfectly satisfied with it, and are sure that it is the best method of setting milk, giving *all the cream*, and with the least labor in taking care of the milk.

There are two in this vicinity, that are saving to those using them the expense of a hired girl—the ladies finding that the Bureau saves them so much work in skimming and washing small pans, that they can now do their own work alone easier than with help before.

We find that we do not have to use ice except in the very hottest weather; if we will take care to open the Bureau in the evening, so as to use the cool night air, and shut the Bureau in the morning, it will keep cool all day.

One day this week, when the thermometer was among the eighties, the milk in the pan that I emptied at night was 62° by the thermometer, and that without any ice, showing how easily we can keep the milk cool by just using the night air. We have not put any ice in our Bureau yet this year.

To any one wishing the *Easiest, Neatest, Quickest* and most *Perfect* method of setting milk, we would recommend the Ferguson Bureau Creamery.

Respectfully, WM. H. MATTHEWS.

"I have used the Ferguson Bureau Creamery, and in my opinion it is the best cream-raising apparatus with which I am acquainted.

"I find it to produce the largest amount of Butter, and of the best quality, and with the greatest saving of labor. I prefer it to any deep-setting apparatus, or any open pans, and cheerfully recommend it to all dairymen."

May 22*d*, 1880. CHAS. E. FISKE, Greenfield, Mass.

[Mr. Fiske made the butter that took Five First Sweep stakes Prizes at the Mass. Butter Show last December, (the Mass. Sweepstakes, $50; the New Eng. Sweepstakes—a Mosely & Stoddard Creamer; the Ferguson Sweepstakes—a Bureau Creamery; the Franklin Co. do. —$12; the Boston dealers' do.—$10.]

AMERICUS CIDER MILL

WHITMAN'S PATENT.

The Best Cider and Wine Mill made. It will make Twenty per cent more Cider than any other.

Perfectly Adjustable.
Three Sizes.

Geared outside. Large Mills made for two cranks. Prices as low as any first-class mills.

Circulars giving full description sent free

Address the manufacturers.

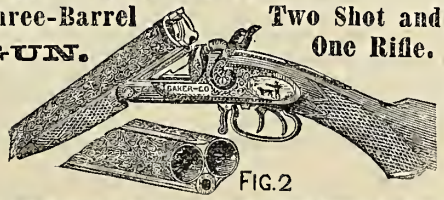
WHITMAN AGRICULTURAL COMPANY,
Saint Louis, Mo.

THE BAKER GUNS.

We make the best donble gun in the world for the money—choke-bore, rebounding locks, extension rib. Our $40 gun has the best English twist barrels, and the best material throughout. All guns sent on trial and guaranteed.

Price—Best English Twist Barrels, $40. Damascus steel, $55 to $200. Send stamp for Descriptive Circular.

Three-Barrel GUN. Two Shot and One Rifle.



A new feature in the Gun line. It is light, compact; from 8 to 10 lbs. in weight. The Rifle is perfectly accurate. It has proved a great success for all kinds of shooting. All guns shipped on trial and guaranteed. Price $75 to $250.

L. C. SMITH, Sole Maker of Baker Guns, Syracuse, N. Y.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from Page 260.

In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations are seldom repeated, as those who desire information on a particular subject can cheaply obtain one or more of the back numbers containing what is wanted.

Back numbers of the "American Agriculturist," containing articles referred to in the "Basket" or elsewhere, can always be supplied and sent post-paid for 15 cts. each, or $1.50 per volume.

The German Edition.—All the principal articles and engravings that appear in the *American Agriculturist* are reproduced in the German Edition. Besides these, there is a special department, edited by an eminent German cultivator. Our friends can do us a good service by calling the attention of their German neighbors and friends to the fact that they can have the paper in their own language, and those who employ Germans will find this Journal a most useful and acceptable present.

Bound Copies of volume 38, and of every previous volume back to Vol. XVI. (1857), neatly bound, with gilt backs, Index, etc., are supplied at $2 each (or $2.30 if to be sent by mail). See Publishers' Notes, 2d cover page.

Clubs can at any time be increased by remitting for each addition, the price paid by the original members; or a small club may be made a larger one at reduced rates, thus: One having sent 6 subscribers and $7, may afterwards send 4 names more and $3, making 10 subscribers for $10.00; and so for the various other club rates.

Terms to New South Wales, New Zealand, Australia, Africa, etc.—To several inquirers. Under the latest revision of the Postal Union Regulations the price of the *American Agriculturist* (either English or German edition), including postage *prepaid* through, will be covered by 7 shillings sterling per annum. This applies to the above countries, and to all others embraced in the General Postal Union. The simplest mode of remittance is by Postal Money Orders, payable in London, to the order of Orange Judd Company. These can be readily cashed in N. Y. City at a slight discount, which the publishers will cheerfully pay. For Club rates, (postage included), see our second cover page, and reckon 22 cents to the shilling sterling.

Bitter Milk.—Last month we gave the statement of Mrs. "A. N." of Texas, that the milk was made bitter by Dog-Fennel, which the cows ate. Prof. D. L. Phares, Woodville, Miss, writes that it is a common error to suppose that cows eat the plant named. He says "Cows do not eat Dog Fennel, nor if eaten would it produce the alleged effect. The plant producing the bitter milk is *Helenium tenuifolium*—Bitter-weed. Where this plant is eaten in large quantities it causes the butter to be a little bitter and also the flesh. Mutton is rendered bitter by this same plant; and cooking does not remove the bitterness. Ignorance of these facts caused families to suppose that attempts were made by servants to poison them. And it has been my fortune more than once, by showing the true state of the case, to save innocent persons from prosecution for 'attempt to poison'." The plant in question is a native of the Southernmost States, and is sometimes seen in northern gardens. It has smaller yellow flowers than the common *Helenium autumnale*, the "Sneezewort" and very narrow, almost thread-like leaves.

Excursions to Europe.—When one has determined to make a visit to Europe for the first time, his first step in the way of preparation is to look up some friend who has already been there, and inquire of him as to routes, hotels, expenses, and such other particulars as will help him on the way. Every one can not readily find a person who can give him such aid, but he can procure it of Cook & Son, the excursionists, who have a wide reputation for taking excursion parties to nearly all parts of the world. It is not necessary to travel with a party in order to avail one's self of Cooks' facilities, as a large part of their business is in furnishing tickets and information to single travellers and families.

A Perpetual Source of Interest, and Instruction,

To every Family, and to every individual, is a really good **Compound Microscope,** which is a far more effective and satisfactory instrument than anything in the way of a Simple Microscope. The latter, by means of a single lens, or two or three of them placed together, simply magnifies objects from 3 to 25 diameters, though not very distinctly above 10 or 12 diameters. The Compound Microscope makes a magnified *image* of the thing looked at, while other lenses remagnify this image, and thus the original object is seen enlarged a hundred or a thousand or more diameters, and many thousand times its original size, according to the power of the instrument. Then it has sundry arrangements for adjusting the focus, for holding the object, for concentrating light upon it, etc., etc. The Microscope opens a new world to one far more extensive, and if possible more interesting than anything that can be seen with the unaided eye. For example, the fine dust on the wing of a butterfly, or moth, seen under the Compound Microscope, becomes a mass of most beautiful feather-scales of regular form and construction. The foot of a fly, or other insect, becomes an object of great interest. The mould upon cheese, or on leather, etc., appears as a minute forest of plants, as it really is. There is a vast number of objects all aronnd us that can thus be exhibited to the eye in most wonderful forms, and the instrument is a perpetual source of interest, instruction, and wonder.

Until recently, a really valuable Compound Microscope, with all its parts, has been far too costly to be within reach of most families or individuals. After long effort, repeated trials, and many failures, the Editors of the *American Agriculturist* succeeded in securing a Compound Microscope having all the parts and the effectiveness of those costing five to ten times as much money, so that this most desirable instrument is now brought within reach of the great mass of the people. This most desirable end has been reached not only by new devices and inventions, but especially by the application of automatic machinery to making with great accuracy the multitude of parts that were previously only made by slow and less accurate hand-work.—A large number of these new Compound Microscopes have been made and tried, and strongly *approved* not only by the highest scientific authorities, but by many unscientific families who have put them to practical and most interesting use, so that we can now recommend it to all with entire confidence that it will give the highest satisfaction and delight, not only to the young and old of all classes, but to Schools, to Physicians, and to scientific investigators.

☞ A marked feature of this new Instrument is the **Camera Lucida,** which enables one to throw the greatly *magnified* image of any small object upon paper in such a way that it can be readily drawn or sketched for preservation, even by a child large enough to hold and use a pencil.

☞ A full Description of the Instrument, with engravings, showing its parts and use, etc., will be forwarded to any one desiring a copy, upon receipt of address.

How Much Corn for a Hen.—"G. B. T." Owego, N. Y. One bushel of corn will feed one hen for one year, and if she has the run of a barn yard and the fields, she will do well on this quantity. If given no other kind of feed, a hen will need a quarter of a pint of grain a day, or 45 quarts for the whole year.

Sit or Set?—"S." No, either is not right. You *set* a hen, but the hen's business is to *sit*. The hen *lays* eggs, and the eggs *lie* in the nest. There is a difference.

Moving Westward.—If we should draw a north and south line through the United States, dividing the country into two parts, so that there would be the same number of bushels of wheat produced on the west side of the line as on the east, it would be found that the line each year would have to be drawn farther westward. According to the report of the Bureau of Statistics, this westward movement of the dividing line has been on an average nearly 15¼ miles for each of the last 28 years, or upwards of 450 miles in the last 30 years. If an east and west dividing line is drawn it will be found to coincide nearly with the 40th parallel. The *central point* of wheat production is then moving to the west along this east and west line; it was in Eastern Ohio in 1849; ten years later in Indiana; a decade later in Eastern Illinois, and now the *hub*, so to speak, is in Western Illinois, but will soon cross the Mississippi.

To Destroy Chinch Bugs.—"T. H. G.," Whiteside Co., Ill. Chinch Bugs may be destroyed in great numbers, by burning the stubbles and rubbish, or by plowing it under, when many will find their way to the surface again. Burning makes an end of them.

"Seeding Down" With Roots.—"L. A. J.," Plymouth Co., Mass. This is always summer or fall seeding, and is done after the cultivation of the roots is over. The practice is most usual in connection with such roots as may be harvested without much disturbance of the ground; but it is not particularly objectionable to seed down with Carrots, Sugar-beets, or such Mangels as have to be started with a spade, or fork, at harvesting. It is important that the ground should be left nearly level at the last hoeing, to rake or hoe in the seed, and to roll after the roots are pulled.

Ash of the Pea-Nut.—H B. Cornwall, Prof. of Analytical Chemistry in the John C. Green School of Science, College of New Jersey, Princeton, having occasion to refer to the composition of the Pea-Nut, could find no analysis of the ash. This deficiency was supplied by Mr. W. M. Norris, a post graduate student at the School; the results of the analysis, now for the first time published, are forwarded by Prof. C.

Per 100 parts of Ash;

Silica	1.06	Magnesia	12.65
Potash	44.73	Phosphoric Acid	17.64
Soda	14.60	Sulphuric Acid	2 53
Lime	1.71	Chlorine	0.15

Carbonic Acid and Carbon undetermined.

The kernels yielded 2.08 per cent of ash.

Spent Tan Bark.—"W. A.," McVeytown, Pa. Tan bark is of no use as a fertilizer, except for the ash it contains. The best use to make of it is to employ it as a mulch around young trees, currant bushes, etc.

To Break Up a Broody Hen.—"J. S.," Baltimore, Md., gives his method thus: "You inclose the hen in a coop (light or dark), and keep her there for 3 days and 3 nights. She must not have a particle of victuals or drink. When she emerges she will be so 'run mad' hungry, as to banish all thoughts of her former intentions. No fear of starvation in this plan. I have practised it for years, and recommended it to hundreds. It is a sovereign cure. Several hens may be put together. One obstinate case in 100 *may* occur. Then repeat the dose."—But how about the Society for the Prevention of Cruelty to Animals, and its good work?

The Boys' Cotton Crop.—The "Alabama Farm Journal" has offered a premium of $50 to the Alabama boy who shall raise the largest crop of cotton on a half-acre of land. We hope there will be a large number of young cotton growers that will enter their names for this prize; of course only one out of the hundreds who try can get the prize, but the trying will do every one much good. Other States might offer prizes for different crops.

Some Dairy Figures.—The dairy industry in the United States represents over $1,300,000,000, with an annual production of $350,000,000 worth of Butter and Cheese. This is $50,000,000 more than the wheat crop of the country. The number of pounds of butter made last year, as near as can be calculated, was 1,500,000,000 pounds.

Fish Skins.—It is comparatively recent that fish skins have been put to any practical uses. At Gloucester shoes have been made from the skin of the Cusk, and a patent is said to have been secured for this preparation. The skins of thornbacks are prepared as a substitute for sandpaper. Bouquets of flowers are also made from them.

The English Sewage Farms.—"M. W. S.," LaSalle Co., Ill. The sewage farms in England have not been profitable ventures directly. Indirectly they have saved money for the towns and cities, inasmuch as the cost of running the farms has been less than that of disposing of the sewage in the ordinary way, considering cost in its fullest sense and not in its pecuniary meaning wholly. Every dollar's worth of product grown on the farms has cost probably two dollars, but the waste has been got rid of very cheaply and inoffensively. Reports of the different sewage farms have been published in various English journals, but we do not remember that there has been any publication in a more permanent form.

T. N. S. S. F. T. P. O. C. A.—What a pity that so good a thing should have such a name that its initials only, make the formidable array of letters above given. "The Nova Scotia Society for the Prevention of Cruelty to Animals" sends us a circular by its Secretary, John Naylor, Esq., in which they announce to kindred Societies, and to all interested, that they have examined a new cattle car, which they recommend to other Societies and to railroads generally. To read the description of the excellent arrangements for the comfort of the animals, one wishes that the inventor would turn his attention to the construction of cars for carrying passengers.

A Doctor on Pie.—Here is a man, and a doctor too, that has no sympathy for the much abused pie. "Pie is vile, because it is indigestible, inexcusable, and mysterious. It is indigestible from the very nature of its composition, it is inexcusable because it is tampering with the holiest functions of the stomach to offer pie to it in place of food, and it is mysterious because you don't know what you are eating."—There are two general classes of pie, the one we eat and think well of it, the other—well! it is the kind the doctor has described.

Cabbage Worms Again—Other Remedies.

The Cabbage Caterpillar or "Worm," has so many natural enemies, that these, aided by the means for its destruction employed by the owner of the cabbages—man—have so greatly reduced its numbers that we now hear but little of it in localities where, a few years ago, it was feared that cabbage culture must be abandoned. In those places where it appears for the first time, cultivators are having the same experience that those of us had who endured the visitation when the insect first appeared in this country a dozen or so years ago. It happens that the Cabbage Worm is a matter of great importance in some parts of the country every year, and whatever relates to its destruction is of interest to a large number of readers. We gave, last month, some hints about destroying the worms in advance, so to speak, by killing the moths before they can lay their eggs. We also stated there, that the most generally successful remedy is hot water. To many, the idea of applying hot water to a living plant is new, and such persons ask for more full directions. Like the hunter who aimed to kill if the animal should be a deer, but to miss if it were a calf, we must have the water hot enough to kill the worm and miss the plant. This is 160°, or from that to 170°. One with a little practice, after learning how water heated between 160° and 170° feels to the hand, hits the right temperature without the use of the thermometer every time. The water is conveniently applied with a common watering-pot, but that is ordinarily made with a rose, which scatters too much, and there is a waste of water, a matter of no little consequence if one has to bring it a long distance. If many plants are to be treated, it will pay to have a rose made for the purpose, one much smaller than those sold with the pot. It should be, borne in mind that the water, in passing through the air in small streams, will cool rapidly. Matters should be so managed that the water shall be at the temperature named when it reaches the worm. The water in the pot may be considerably hotter than 170°, and if need be, cooled by holding the rose at some distance above the plant. On the other hand, if the water is scarcely above 170°, the rose, in applying it, should be held close to the plant, to avoid cooling. Those who put a little thought into their work will have no difficulty.

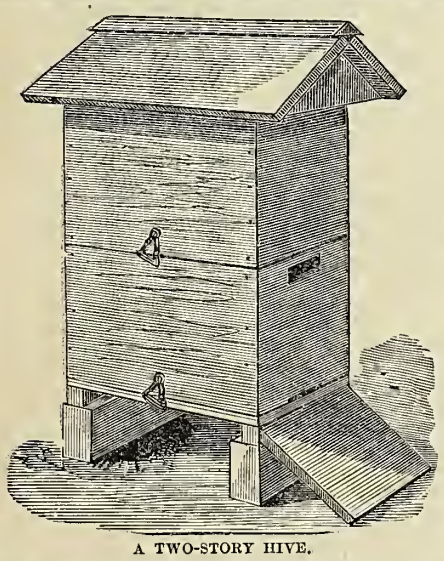
A correspondent, "G. M. L.," Cincinnati, O., writes that Wheat Bran, or Shorts, if sprinkled upon the cabbages when they are wet with dew, or rain, will completely banish the pests. When the Cabbage Caterpillar first made its appearance we gave all the remedies in use in Europe, where it is an old trouble, and Bran among the others. Since then, having heard nothing of its use, we had forgotten about it until reminded by our correspondent. We suppose the bran, in this case, acts mechanically rather than as a poison; the particles of bran probably irritate or otherwise annoy the worm and interfere with its movements, and the insect starts off in search of more comfortable feeding grounds.

Among other things used in Europe to get rid of these caterpillars is the common Brake, or Bracken, a tall coarse fern (*Pteris aquilina*), found almost everywhere. The fronds (leaves) of this are laid upon the cabbages, and the worms are said to leave at once. The leaves of the Elder are used for the same purpose; our Elder is quite different from the European, and may not have the same effect, but it is easily tried. In France the refuse from the Hemp brakes, the broken leaves and crushed seed pods, is used. The odor of this is said to kill the worm in a very short time. It has been suggested to sow Hemp seeds between the cabbage rows that its odor may keep off the insect. A year or two ago we published the statement that some European gardener had discovered that water, in which the clippings of Tomato-plants had been steeped, promptly killed plant-lice and other insects. We would suggest a trial of this upon the Cabbage Worm. While we have no doubt of the efficacy of hot water, a cold application is attended with much less trouble, and for that reason preferable.

Bee Notes for July.

BY L. C. ROOT.

It is safe to say that the greater part of the best surplus honey is, in most northern localities, gathered from Basswood. The bloom commences in Central New York from the 10th to the 20th of this month; the present season it may begin even earlier than this. The yield continues from 12 to 20 days, according to the variation in the opening of the flowers, caused by the difference in altitude and other local causes. Basswood is a free bloomer, and generally yields honey profusely, and of superior quality; in fact, I think basswood honey is not surpassed by that of any other plant in any region of the United States. I speak of this to show the necessity of having all things in readiness, to take the advantage of this most valuable honey yield when it comes. The practical bee-keeper has been preparing for this harvest for many weeks. Strong stocks, and plenty of room for storing surplus honey are the essentials. Every bee-keeper should be familiar with the sources from which he is to expect his honey, and be fully prepared to secure it promptly. If a day is lost, no after vigilance will secure the honey which might have been obtained during



A TWO-STORY HIVE.

that day. Many bee-keepers wait until the yield has begun, before they prepare their hoxes, or arrange their swarms for surplus, and they are the ones who find the keeping of bees the least profitable. The basswood blossom matures very slowly. In riding through the country for the past week, I have looked for the first appearance of the buds, I find the trees heavily budded, at this date, May 29th. They are nearly one half the size they will attain when open, and yet they will not be in bloom until the first half of July. The old saying that "good things come slowly" is applicable here. They seem to start thus early, and mature slowly, to keep us in mind of the good yield coming, and to give us ample time to be fully ready. Let us then have our boxes ready with generous starters of natural comb, or comb foundation, and properly arranged at as early a date as the bees will begin filling them—or if the surplus is to be taken in the form of extracted honey, have the empty combs in place which are to be used for this purpose. There are two methods of doing this: many bee-keepers prefer placing one hive above the other, as shown in the engraving. Others advocate a brood hive where the extra combs are added at the side of the brood combs. Our preference has been to place these combs at the sides rather than the top. We shall test the two methods extensively the present season, and give the results at a future time. If it is the intention to extract the honey, procure an Extractor in season, and have casks or cans in readiness for storing the product. I speak of basswood at this time because of its value in most locations. The same advice is applicable to any class of blossoms from which the yield of honey may be expected. Be ready for the yield from whatever source it may come.

Ice and Ice-Houses.—In these hot July days, we would call the attention of those who did not build and fill an ice-house, as advised last winter, to the comfort, convenience, and money value of a good supply of ice at this season of the year. Perhaps this reminder will stir some persons up to the resolution to build and fill a house the coming winter, at least it is hoped so.

American Apples Abroad.—The extent to which our apples find a market in Europe is surprising. It is impossible to give any exact figures on this article of export, but when a single firm shipped 30,000 barrels in 1879—a poor apple year—we may conclude that our standard fruit is in demand; and that the best varieties—those of fine quality, and good keepers—will find a ready foreign sale. It is reasonable to expect that the close of the present year will see the export of apples well up among the millions of barrels. With this expectation, it is well for orchardists to see that a good share of their fruit is of a kind that will bear the ocean transit, and also be acceptable to the eye and palate of the foreign consumer. The Baldwin, Newtown Pippin, Spitzenberg, Northern Spy, and Roxbury Russet are among the foremost of the varieties that are in most demand abroad.

Small Fruits.—This is the season of small fruits, and we wish every family throughout the country had all of them that they could use. A noted writer has recently said: "Small Fruits, to people who live in the country, are like heaven—objects of universal desire, and very general neglect." There is more solid truth than comfort in the above remark that is so strongly put.

Drawing Grain, etc.—If there is only one team upon the farm, and two wagons are to be had, it is often a great saving of time to change the team from one wagon to the other, so that there may be a wagon in the field loading and another in the barn being unloaded at the same time. In this way there may be no going of the hands to and from the field, except the one who handles the team. Three wagons and two teams are still better.

Fix Up the Barn.—When we go along the country highway, and see the wide cracks in the empty barns, we want to stop and tell the owner that those cracks are leak holes in his farm management. Through these places the farmer's profits slip away, because the thief—cold—finds here its entrance. While his cattle shiver, some fodder must pay the cost, or less flesh and milk are the results. Now, before another winter, stop the leaks.

Results of Ensilage.—Dr. John M. Bailey, of "Winning Farm," near Bellerica, Mass., is pleased with his results of Ensilage. He says; "Since the opening of my silos, Dec. 2, 1879, I have been feeding a large stock of cattle and sheep upon corn fodder, ensilaged last Sept. I am now (May 1), feeding my milch cows, and ewes and lambs upon it exclusively. Its preservation is as perfect as when the silos was first opened." Dr. Bailey cordially invites farmers to visit his silo, and inspect the system of preserving green fodder, which he prizes so highly.

Cow Milkers.—There are still inquiries regarding "milking machines" now and then coming to us, and this of itself shows that many are at least slow to accept them as proper instruments in the dairy. There are cases when tubes of some sort are necessary to draw the milk from the udder, as, for example, when the teats are badly chapped, the udder caked, or when the cow is a very hard milker. Under ordinary circumstances the old way is the safest and best, and if nothing is the matter with the cow we should not encourage the use of any of the milking tubes or so-called "milking machines."

The Buckwheat Field usually receives the poorest attention of any farm crop, and sometimes the preparation given the soil—usually the least fertile portion of the farm—is so imperfect, that it seems like imposing on the good nature of this plant to sow it and expect it to grow at all. But the buckwheat plant can stand this harsh treatment better than any other grain, and for this reason it is so valuable in building up a worn-out, or otherwise poor soil. It should be borne in mind that if buckwheat will improve a field when poorly treated, it will do all the more good if the soil is thoroughly prepared for it, that a good bed may be given the seed to grow and do its best. If it is intended to plow under the crop as a green manure, then an application of a quick acting fertilizer will pay well, that a large growth may be secured to be turned under.

Coal Ashes for Walks.—Coal ashes are of very little value as a fertilizer, and are not worth applying to the soil unless they will make it lighter and loose, and thus improve it mechanically. After trying all sorts of materials, a writer in "The Garden" (London) says he finds none better for walks than coal ashes. The bottom of the walk is made of stones and coarse pebbles, covered with an even surface of the ashes, which, when thoroughly rolled down, makes one of the most pleasant of walks, and is easily kept free from weeds, and smooth and compact. This agrees with our own experience.

The Auction Sale of Jerseys.

The public sale of Jersey cattle in charge of Peter C. Kellogg & Co., held in New York City on May 26-27, was in some respects an interesting and noted one. It afforded a striking illustration of the importance which is now attached to animals that have a blood relationship with those that are or have been great performers at the pail. The reputation which the cow "Alphea" obtained as a butter producer, attaches itself to all animals that have the blood of that famous cow or that of her own brother, "Jupiter," in their veins. A portrait of "Alphea" was given in the *American Agriculturist* in May last, where will be found an account of her great butter-making qualities. We did not at that time think we should so soon have an illustration of the great value that attaches to such an animal in her progeny. The descendants of "Alphea" and "Jupiter" will sustain the reputation of the mother of the "'Alphea' strain" of Jersey cattle, and it is because these qualities are perpetuated, that so much importance is attached to the nearness of a given cow to another that has been a remarkable milker. For example—"Eurotas," the most famous Jersey cow now living, is a granddaughter of "Alphea," and there are others that are, so to speak, "chips from the same block." It is not surprising that those animals at the sale, which had more or less of this valuable "Alphea" strain, were eagerly sought for, and the prices at which they sold were high. A son of "Eurotas" headed the list—a calf "Ramapo" of 7 months—and was struck off to Mr. Lawson Valentine, of New York, for $600. This was a surprisingly low figure, and an offer of $1,000 was shortly refused by the purchaser. This handsome animal is now at Houghton Farm, Orange Co., N. Y., where it is expected he will develope into a breeding animal that will sustain the reputation of his family and worthy of the distinguished company in which he will find himself in the Houghton Farm herd. The two cows having the largest proportion of "Alphea" blood, namely, "Myra 2d" and "Lass Edith," were highly appreciated by a number of cattle men, and the bidding was spirited and enthusiastic. Both were purchased by Mr. Valentine at the following figures: "Myra 2d" (6289), at $1,400; "Lass Edith" (6290), at $1,425. The mingling of the "Alphea" blood in these valuable cows, and also the relationship which they bear to each other, can best be shown by the combined pedigree chart which is here given. It is interesting to note that the two heifer calves of these cows sold at the same sale at the following figures: "Lass Edith 2d," $825, to Moulton Bros., and "Donnabel," daughter of "Myra 2d," sold for $810, to J. Stillman. "Butter Boy," the sire of these valuable young heifers, was also secured by Mr. Valentine. It is a matter of congratulation that the animals of the "Alphea" strain were not widely scattered in the public sale, but were kept together as the foundation of a Jersey herd at Houghton Farm, which, under the supervision of Prof. Manly Miles, Mr. Valentine can reasonably hope to make of national reputation. The sale of the second day consisted largely of unregistered and grade animals, and was in marked contrast with that of the previous day, in the character of the animals and the prices at which they were sold, and the two days afford a striking illustration

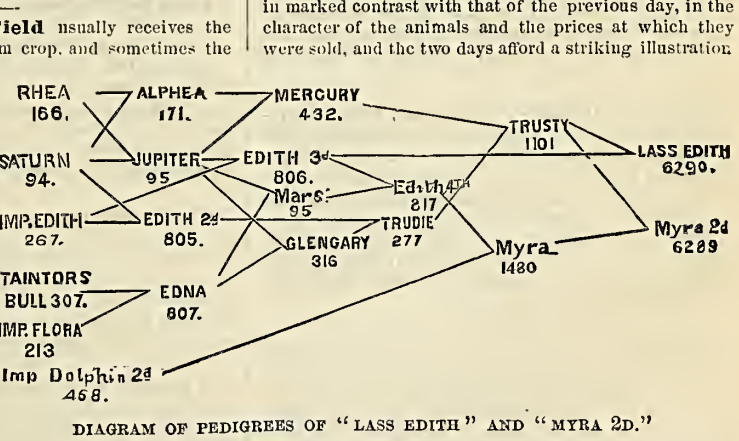


DIAGRAM OF PEDIGREES OF "LASS EDITH" AND "MYRA 2D."

of the real money value of a noted pedigree. If some of our readers consider the prices paid for the cows and heifers as "fancy," and extravagantly high, we have only to say that the animals sold for what a company of shrewd and intelligent breeders considered them worth, and they were the result of sharp competition among men who are not given to paying more for things than they are really worth. The prices would indeed be "fancy" as the value of these as butter-making cows and heifers, but with them was bought the possibility of a long line of descendants, each of which can claim a share of "Alphea" blood. How valuable this blood is, the sale of the second day shows. Here good animals were offered, but they could not only not trace back to a strain of "Alphea" blood, but could not trace back at all, having no record. As a consequence, sixty-two cows, some of them excellent milkers, sold at an average of about $50 per head.

Winter Fodder—Still a Chance.—The grass in many places has been destroyed by the Army Worm, in many other cases a short hay crop is due to the drouth. But farmers can still sow fodder corn with a fair prospect of a good crop. This can be cured in the usual way, or stored fresh in *silos*. Though we have already given a full account of the process of *ensilage*, we shall describe it again in time for those who wish to do so, to make a trial of it. It is sufficient to say in this last word, as we close the pages, that there is no real cause for any one to despond. The great national plant, Indian Corn, now comes to the rescue. Early and prompt action—an abundance of manure, if green and fresh, no matter, a quick growing kind of corn, and sowing at once, will, in all ordinary seasons, give an abundant crop, of the best possible fodder. Do not lose a day, but sow the corn.

Canoe and Camera.—A Two Hundred Mile Tour through the Maine Forests, by Thomas Sedgwick Steele. New York: Orange Judd Company. This work will be appreciated by two classes of persons: those who go to the Maine forests, and those who do not. It is not many years since the "back woods of Maine" were quite unknown to any save lumbermen, but of late, as their attractions became known, they have been penetrated by tourists, each year bringing increased numbers. To those who contemplate a visit to this little explored country, this work will be most valuable, as it has all the accuracy and much of the minuteness of a guide book, without any of its dullness. The addition of a map, on a large scale, prepared especially for the work, adds greatly to the value of the book, and make it indispensable to all who visit that region. Those who do not go to the Maine forests—that large class of stay-at-home travellers—will find this work the next best thing to a tour, as it presents the peculiar features of the country, the incidents of travel and camp life, in a fresh and pleasing style, while the descriptions are supplemented by a profusion of engravings largely the result of having a "Camera" with the "Canoe," though they are by no means all from photographs. Sketches by the author himself, and several artist-friends, give a pleasing variety, in which the humorous and sometimes ludicrous aspects of canoeing and camping are not overlooked. The general excellence of the engravings deserves mention, and some of them might be taken as examples of the present perfection to which the engraver's art has reached in this country. The paper, press work, and binding, all combine to give the work a fitting setting, and make it one of the most beautiful volumes yet added to the tourist's library. Price, $1.50.

The American Bicycler.—This work, which was noticed a few months ago, now comes to us enlarged by an "Appendix for 1880," which adds 60 pages of new matter of interest to all who run on wheels.

Sending Fruit.—Some send us specimens that we may see how fine they are, and others send them to be named. Some think to pay the express charges, others do not. If it were only now and then we were required to pay express charges, it would be of little consequence, but when this occurs several times a day, it amounts to a larger tax than we care to pay. Our friends should bear this in mind when sending fruit.

Special Cultures—Tobacco and Onions.—Within a few days we have had letters asking about the cultivation of Tobacco and Onions, to answer which in full would require us to write several treatises. It was to meet just such inquiries as these that we several years ago offered prizes for the best essays on their cultivation. Several essays besides those taking the prizes are printed, and each little book contains fuller information on the crops than can be found elsewhere. The same may be said of Hops and Flax.

Wild Hops.—"Mrs. E. J. V.," Howard Co., Neb., sends a specimen of Hops found growing in the State, asks if it is of a good kind for cultivation, and how to grow them from seed. The chief difference in the few varieties of hops is in the size of the clusters, and those sent are of very good size, the largest we have seen from wild vines. Hops are not multiplied from seed. It is a plant with separated flowers, some bearing all staminate or sterile flowers, and others all pistillate or fertile ones. When seeds are sown, a large share of the plants may be sterile, and this can not be ascertained until the second year at least. They are propagated by sets, or shoots taken from the old plants in early spring. Shoots 4 to 6 inches long are used. In cultivated plants, each hill, or old root, pushes a great many more shoots than are needed, and the excess are taken for new plantations.

The "American Wonder" Pea.—Last year we had a very short row of this variety in a favorable season; this year we had a row over 200 feet long, in a most unfavorable season. Taking the two together we have formed a most favorable opinion of the "American Wonder" which is based upon these facts—1st, It is dwarf; 2d, it is early; 3d, it is productive; 4th, it is of most excellent quality. While our experience does not allow us to make a positive assertion, we have no doubt that it will be found to yield more from the same area than any other early pea, because it can be planted so much closer than the sorts that require brush. It grows only about a foot high, and each plant is well loaded with, in favorable seasons, long, well filled pods. With us these have matured all together, allowing the crop to be taken at one picking, an excellent feature in a market pea, and while not considered so desirable in the family garden, it will not be found an objection when provided against by successive sowings. For quality on the table it is easily first class. Messrs. B. K. Bliss & Sons deserve the congratulations of the whole gardening community for having introduced so excellent a variety of this popular vegetable.

Shirts by Mail.—The Newark Shirt Company, Newark, N. J., at one time advertised to send shirts by mail. Though they have not advertised for a long time orders continue to come to them, and we would relieve them of the trouble of returning them by saying that they have discontinued their retail and mailing departments, and confine themselves to manufacturing for the trade.

Keep the Head Cool.—There is reason in the notion that a cabbage-leaf worn on the head, within the hat, will prevent sun-stroke. There is no special virtue in cabbage-leaves, any other leaves will answer—so will wet paper. Any thing of the kind worn upon the head will serve to protect it from the hot sun.

Strawberry Jam.—A correspondent wishing us to name a variety of strawberry, placed the fruit in a box, with alternate layers of cotton-batting, the box being but partly full. When they reached us, there was too much cotton among the strawberries, and too much strawberry among the cotton, for either to be especially useful. Strawberries need no packing material, beyond what their hulls, which should always be left on, afford, and the box should be so full, that they can not shake.

The White Grub and June Bug.—Last month, p. 247, we mentioned the success of W. C. Stiles, Jr., of W. Va. in catching June Bugs, by the use of a lantern set in a pan of water upon which was a layer of coal oil. Mr. S. writes that he finds the trap to answer as well without the oil as with, and that no beetles appear until two hours after sunset, hence the expense of keeping up the lights before that time may be saved. He says that he has caught with two traps in seven nights over 1,500 June Bugs! This is a very important matter. If this meant only the destruction of the same number of white grubs, it would be worth all the trouble; but allowing the beetles to be half males, which is hardly probable, and the female to lay the small number of 100 eggs, this would make 75,000 white grubs which are—not killed off, but prevented from existing at all.

Hats for Horses.—In the hot days of summer, one rarely meets a dray horse or other hard-worked horse, without some contrivance for preventing the direct rays of the sun from beating directly upon its head. Some styles of these hats were given last Aug., on page 314, and there are a vast number of other methods by which the same end—the comfort of the horse—and it may be its safety, for horses have been known to be overcome by heat, and suffer greatly on its account.

The Army Worm and Grape Vines.—Just as these pages are being closed, the report comes that in the vine-growing portions of Burlington and Ocean Cos., N. J., the Army Worm is devastating the vineyards. The vine has not before been considered liable to the attacks of this voracious eater, which seems to develop new likings in its present visit.

"Rural Improvement, by B. G. Northrop, Sect'y of the Conn. State Board of Education," is the title of a pamphlet of about 50 pages, sent us by the author. In February, 1878, we gave an account of the good work done by the "Village Improvement Association" at Litchfield, Conn. In various other villages and towns in Conn. are other Associations actively engaged in improving the surroundings of the homes of its members, and consequently increasing the beauty and attractiveness of the whole town. The existence of these Societies, and the results they have produced, are largely due to the efforts of Mr. Northrop. His official duties taking him to all parts of the State, he has been able to see where such improvements were needed; having a happy way of presenting the subject, and a talent for organizing, he had only to call the people together, point out what should be done, and an "Improvement Association" was formed forthwith. The present treatise is a plea for such Associations, pointing out the good work they can do, not only in increasing the attractiveness of a place, but its healthfulness. It also presents the economic value of tree-planting, and gives useful hints to Railroad Corporations and manufacturers as to embellishing the grounds around their stations and factories. A form of Constitution for a Village Improvement Association is given. The work is quite as much needed elsewhere as in Connecticut; indeed, there is not a village in the land but might be increased in beauty, and consequently in value, by following the hints here given. Sent post-paid for 25 cents.

Beet Root Sugar, and Cultivation of the Beet, by E. B. Grant. Boston: Lee & Shephard. This work bears upon its title page 1880—and there is nothing in its preface to show that it is not a new work. One need not read far to learn that he has in hand an old work, which, however valuable in itself, is far behind the present condition of the beet-sugar interest. The book originally appeared in 1866, and does not seem to be modified in any respect in this reprint. The work contains much that is useful, and has long formed a part of the standard literature of the subject. Price, $1.25.

The Mississippi Valley Hort. Society.—Our usual Fair List will show that this Society's exhibition will be held at St. Louis, Mo., Sept. 7th, 8th and 9th—but something more than this brief announcement is required in this case, as it is the first exhibition of an Association that is apparently to become one of the most important among our many Horticultural Societies. Delegates from the horticultural societies of the different States forming the Mississippi Valley, from that of Texas on the south to that of Iowa on the north, met some time last spring and effected a preliminary organization and appointed an Executive Committee to arrange for a meeting and exhibition in September. Parker Earle, President Ill. Hort. Soc. is Chairman of this Committee, and S. M. Tracy, Sec. Mo. Hort. Soc., is Secretary; his address is 600 Olive street, St. Louis. Covering so many degrees of latitude by its territory, the coming exhibition should be a most varied and interesting one. It is to be held at the hall of the St. Louis Merchants Exchange, which is said to be "the largest and finest in America." The Exchange moreover guarantees the sum of $2,500, which allows of liberal premiums, a schedule of which is before us. For the best collections of each of the different fruits $100 is offered for apples and $50 each for pears, peaches, and grapes. With a Society like this, it becomes a question whether it is desirable to offer money premiums at all. While it may be well to do this at its first exhibition, we think it will be wise to have medals and certificates instead of money—as this will relieve the Society from an element of weakness that always attaches to those societies, the treasuries of which depend upon the annual dues of members. While this Society is intended especially to promote the interests of the horticulturists of the Mississippi Valley, the co-operation is invited of "all interested in the horticultural growth of the country, without regard to locality." We give this new Association our best wishes for its success, and hope that many a one outside of the "Valley" may find it convenient to be present next September.

Practical Camellia Culture, by Robert J. Halliday, Baltimore, Md. Mr. Halliday has long been known as a Camellia grower of large experience, and the results of that experience are here embodied in a work of about 140 pages. It is one of those satisfactory horticultural works, that seem to be peculiar to this country. It tells all that there is to be told, in a plain, straight forward way, beginning at the beginning, and treating every part in full. It is a matter of regret that in so useful a work, the engravings are not in keeping with the text—still they are intelligible, and that is the main point in a practical work.

Practical Artificial Incubation, by J. F. Ferris, Editor of Poultry Monthly, Albany, the Ferris Publishing Company. But few are aware of the widespread interest in artificial incubation that his correspondence makes known to an editor. The matter appears to have attained to too great success, to be disregarded, and it is not yet sufficiently successful to be generally adopted. Whoever will make the last step, and give us an incubator that will produce chicks with as much certainty as the old hen, will be a public benefactor. In this work, Mr. Ferris shows what has been done in the artificial hatching and caring for chicks, and presents various incubators with the claims made for them, by their inventors. This work allows those who are investigating the subject, to have the materials together in a compact form for ready comparison. Price, post-paid, 50 cents.

Potato Bug Enemy.—"W. A.," Lebanon, N. Y., sends Potato Beetles, covered with a minute parasitic insect. It is by no means new, and we wish it were more common. You are right in supposing it to be an enemy to the Beetle. It is a mite, first described by Prof. Riley as *Uropoda Americana*, and figured by him in his work on "Potato Pests." The same was reproduced in the *American Agriculturist* for July 1878, page 267.

Never Keep an Old Sheep.—"It is a picce of folly to keep old sheep ; " says a great sheep grower, and that with good reason. The end of every sheep is the shamhlcs ; it may give one or more fleeces of wool on the way, hut not so many that the carcass will cost more to fattcn than it will hring. A ewe should not bear lambs more than five times ; at the end of this period the carcass will, with proper care, be round and full, and can be fattened with comparative ease. Should the animal he a pure hlood and of a family or strain of blood that is scarce, the case will be otherwise, for the carcass is then considered of very little value as compared with that of the offspring that may be obtained.

Value of a "Calf Feeder."—It is settled beyond a doubt that allowing a calf to suck is an injury to the cow, while at the same time it is the hest method of feeding the calf. But as the cow is above the calf in value and importance, it is economy to remove the offspring and that so soon as the milk is fit to use—after the third day. The ohjection to the system of allowing calves to drink from a pail, namely: that no saliva of any account is mingled with the fast swallowed milk is overcome hy the "Calf-Feeder," which is now used to some extent and highly prized hy those who know its value. The "Feeder" is a covered pail arranged with a ruhber tcat on the cover and connected with a tuhe, the open end of which is in the bottom of the pail. The calf is soon taught to use the feeder and by the process of suction—quite natural to the calf—the saliva flows rapidly and is mixed with the milk; and the calf is better satisfied as is also the owner when the young animal is turned over to the butcher or is kept for a longer period.

Wooden Shoes.—The newly arrived German immigrant often appears in the shoes to which he was accnstomed at home. These are large *sabots*, or wooden dug-outs, and are clumsy in appearance as well as noisy upon the floor or pavement. They have one thing to commend them, each one can make his own without the aid of the shoemaker. However unsightly they may he, these shoes are really serviccahle; wood being a poor conductor, thcy keep the feet warm, and being impervious to water, keep them dry. Indeed there is so much in favor of the use of wood for the soles, at least, of shoes, that several American manufacturers have adopted it for certain styles. A firm in Pennsylvania several years ago made wood-soled shoes, and we for some years kept a pair of thcse to slip on when going into the garden or field in damp, cold weatber, and found them very usefnl. There are many whose occupations require shoes that shall he both durahle and comfortable ; this is especially the case with farmers, who are exposed to all sorts of weather, and we are glad to learn from our advertising colnmns that shoes with wooden soles are still made hy Chas. W. Copeland, of Boston, and more than that, are well made. Were they to come into general use among farmers, wc do not donht that many a fit of illness would he prevented hy those who would wear them.

Sorghum Machinery.—Sometimes a catalogue is more than a mere list of articles and their prices, and gives hesides matters of interest relating to the nses of the materials offered. The catalogue of the Blymyer Manufacturing Company is of this kind, aud hesides offeriug Sorghum machinery, it tells a good deal ahout Sorghum. This firm were among the first to mect the wants of farmers by providiug them with Sorghum machinery at the time when this crop was first introduced, and tbey have since kept pace with all the improvements in this important hranch of agriculture. It is a matter of regret that in an articlc on Sorghum in March last, all reference to this firm was inadvertently omittcd—and it is only an act of justice to say, that whatever position sorghum culture may occupy in the futnre, will be largely due to the labors of this Company in the past. Their catalogue shows that they are prepared to mect all the new demands created hy the improved variety of Sorghum with the machinery for working it up into the best products and that in the quickest and hest manner.

The Potato Disease in Europe.—The heavy losses which the farmers of Great Britain have experienced dnring the last five years from the Potato Rot, have given rise to serious douhts whether this valuahle crop can he grown with profit in those countries in the futnre. Like every other agricnltural trouble, this one stimnlates thonght, and leads to new methods of culture, that are experimental, and it may he heneficial. Of late much attention has been directed towards the finding of a "disease-proof" variety of potato, or at least the pro duction of sorts, that thongh attacked hy the Rot, are ahle to withstand it, and not he seriously injured. To enconrage this work of finding out the hest kiud of potato, prizes have heen offered at different times. aud elahorate experiments, to test the varieties, have heen carried ont, without any very satisfactory results. But a great deal of good has grown out of this seeking for a disease-proof potato, especially in the way of improving the varietics tbrongh carefully selecting the tubers, and their proper cultivation. Knowing that the diseasc is a parasitic fungus (*Peronospora infestans*), the development of which is favored hy warm, moist weather, and hindered by the opposite, there is little hope of finding a variety of potato that will differ so materially from all others, that it will he proof against the attacks of this fungus. There are, nevertheless, certain precautionary measures to be taken. These are embodied in brief, in an English rcview of Mr. Bravender's treatise, "The Potato Disease, and How To Prevent It," from which we take the following: "Secure good seed if you can, entirely free from diseasc. Plant early—on light land, 5 inches ; on heavy land, 3 inches deep—and earth up well. Have the rows from 2 fcet 8 inches to 3 feet apart in gardens, and 3 feet or more in the field for late varieties ; may be rather less for others. If there is danger of frost, cover along the rows with short litter, ahout enough to hide the plants from view. Plant, if possible, in land not occupied hy the same crop the previons year ; aud plant the late kinds, if possihle, in a field by themsclvcs. Use medium size sets, or cut sets if large, about 12 to 18 inches apart in the row, according to size. If the sets arc very small, they need not he so far apart. Manure in autumn, and use potash salts or hone phosphate in the spring ; or else make a compost of manure and earth, ashes, etc. Earth up twice. The tops may be cut off those required for seed, if the tuhers are large enough. Harvest late kinds sooner than is usually done. If there appears any diseasc amongst the crop, sorting over will be required. If you have the eonvenience, store your crop for a timc. and not put in pits until November. On harvcsting, separate the diseased from the healthy ones." We have more or less of the Potato Rot in this country, sometimes to the destrnction, whole or partial, of the crop, and the ahove rules may properly he ohserved hy American farmers. The direction given to "earth up twice," is not nceded with us, while in the moist climate of Britain, the crop is benefited hy "hilling," the conditions arc quite different with us, aud unless in a very wet summcr, flat culture gives hetter returns. While the potato crop is an important one with us, its failure does not bring such consequences to our farmers, as it does to the Irish peasant, whose life, and that of his family, may he said to almost depcnd upon the succcss of their all important potato crop.

Breeding Thorough-bred Stock.—As we were a short time ago looking over a fine herd of thorough-hred stock, upon a farm which we visited, while we did not covet it, we thought that no one, as he looked over these finely proportoned animals, could refrain from wishing to bave a similar herd for himself. There is a charm in the whole matter of stock-breeding, and especially so if one has fine animals at the start, and their hest points are made more fixed and prominent as the generations pass. But while looking at these animals and listening to the explanation of this and that point of excellence, the thought naturally suggested itself: is not this breeding of pure-hloods with the eare and nicety, here manifest, a sort of fancy farming that only a few can hope to indulge in? What capital is invested! A thousand or fifteen hundred dollars, which in the breeder's view is not much, for a cow, is far beyond the ability of the average farmer. In order to succeed as a good breeder of thorough-bred stock, the first requisite seems to be a good bank account, and the second a clear idea of what one is breeding for—an end towards which all his skill—for he must be skillful—must tend. The proportion of men having the requisites for breeders of thoroughbred stock is small ; and any one who contemplates the task should at the outset be sure that he possesses them. We would not discourage any one from undertaking the rearing of a herd of pure-blooded animals; but simply caution against going into it without a thorough preparation for the task. It is only when entered into intelligently and with the requisite capital that it is made to pay—and even then it can be remnnerative only after some years of constant outgo with no corresponding income. The breeding of pure-hred animals is one of the most important departments of agriculture, for upon the existence and growth of such herds does the improvement of farm stock in general largely depend. If all our pure blood animals were taken from us, or rather, if they were scattered broadcast over the country, the work of centuries would be undone, but so long as these animals are kept in herds, with a judicious outflow of the pure blood to he mingled with the common stock of the country, they contribute largely to the general good by gradually advancing the average grade of our farm animals. It is well that there are men of sufficient means, combined with a love for improved live stock, who will keep herds of thoroughbreds, for they can be kept pure only with great care and often at great expense. Whatever may be their motives in building up fine herds, such persons can not well avoid being public benefactors, and we are glad to believe that there are some sufficiently public-spirited who do it mainly because it will conduce to the general good.

Nuts and Nubbins.

There are no sweets in family jars.

The mother of vinegar is very sharp.

Widows and widowers to he repaired.

The road to matrimony is a bridal path.

Gin Sling, a Chinese, is preparing for the har.

Organ-grinders have a strong "turn" for music.

Could not the doctor's fee be justly called ill-gotten gains?

The way to get over a culinary difficulty is to go to Bridget.

It is the man with the rheumatism who is every inch a king.

Among birds the rooster is an early riser, and then comes the crow.

A woodcutter never fells a tree against its will. He always axes it first.

Too much of a good thing, as the kitten said when it fell into the milk pail.

A Utah wedding paragraph says "the bride was togged out in white gauze."

A hypocrite is a man who tries to he pious but can't, with a preponderance of cant.

Temperance reformers should turn their attention to money—it is always tight.

It's a very curious thing that the Nihilists haven't tried a kerosene lamp on the Czar.

Why is the vowel "o" the only one sounded? Because all the others are inaudible.

When Paul Boynton is married and settled, things will not go on so swimmingly with him.

Mrs. Partington says Ike has bought a horse so spiritous that it always goes off on a decanter.

If we could see others as we see ourselves, there would be more good-looking people in the world.

Lampton thinks "the man who whitewashes ceilings is in a sublime business." This is a kiln-joke.

"After all," said the baker, as he left an astronomical lecture, "after all, the world is only a big turn-over."

Many a young man who sows his wild oats, trusts to the grasshopper of forgetfulness to destroy the crop.

The discovery of diamond-making seems something like Edison's light; now you see it, and now you don't.

"If a man calls you a fool, pass him by," says the Persian philosopher; that is, leave him lying on the ground.

"Young man, invest your capital in integrity." It is quite impossible. There is really none in the market.

"I say, my little son, where does the right hand road go?" "Don't know sir; 'taint been nowhere since we lived here."

A poet says: "Oh, she was fair, but sorrow left traces there." What became of the rest of the harness he don't state.

Scene: Recitation in Mental Science. Professor—"How do you know that you know anything?" Senior—"I don't know.'

Tell me what is an average? Child—A thing to lay eggs on. Mother says our old hen lays six eggs a week on an average.

"Sekretz, is a bad investment—if you pass it you loze the principal, and if you keep it you loze the interest."—Josh Billings.

How is it that trees can put on a new dress without opening their trunks? Because they leave out their summer clothing.

The post mortem examination of a man's life always reveals finer traits of character than he was ever before known to possess.

When you can hardly say enough for a man, say he is one of a thousand. It will be true as long as there are 999 other men in the world.

The seal probably puts up with more insults and abuse than any other animal. He is known the world over as a furbearing animal.

A child being asked what were the three great feasts of the Jews, promptly and not unnaturally replied: "Breakfast, dinner, and supper."

A mule's head does not contain a brain capable of culture and refined rearing, but it is wonderful to what an extent the other end can be reared.

An Indianian said to a young man who chaffed him upon his bald head: "Young man, when my head gets as soft as yours I can raise hair to sell."

It is a great piece of folly for a man to be always ready to meet trouble half way. If he would put all the journey on trouble, he might never meet it at all.

Patrick having been told that Dr. Peters had found an asteroid, remarked: "Bedad, he may have his asteroid, but as for meself oi prefer a horse ter ride."

"Will you name the bones of the head?" said a teacher to one of his class.—"I've got 'em all in my head, teacher," replied the pupil, "but I can't give 'em."

A Minnesota farmer who has five grown up daughters, has sued the county on a claim that his residence has been used as a "Court-house" for the past two years.

"If Jones undertakes to pull my ears," said a loud-mouthed fellow on a street corner, "he will just have his hands full." The crowd looked at the man's ears and laughed.

This is the way the married editor sums up Lent: "The hen which lays the Easter egg is a great bird, but it takes the goose which lays the golden egg to bring Easter bonnets."

If Noah had foreseen the future, and killed the two mosquitoes which took refuge in the ark, he would have rendered some of the strongest words in the English language unnecessary.

A little girl read a composition before the minister. The subject was, "A Cow." She weaved in this complimentary sentence: "The cow is the most useful animal in the world except religion."

"That is what I call a finished sermon," said a lady to her husband, as they wended their way from church.—"Yes," was the reply with a yawn, "but, do you know, I thought it never would be."

Newly married husband: "This is a friend of mine, my dear—a friend of twenty years' standing." His bride: "Good gracious. Then pray give him a seat, for I am sure he must be tired."

Dr. Charles Smart of the army is looking scientifically into the well and cistern water of New Orleans, to ascertain what the people of that city drink. We fear the doctor is on the wrong scent.

The Cleveland "Herald" advises Christians to hire a steamboat, give a Sunday excursion, and then suddenly open religious services on the crowd of loafers. They must either listen or jump overboard.

"Do you use many flowers on your table?" asked Mrs. Murray Hill of a southern visitor.—"Well, yes," was the reply; "we have wheat and rye bread for breakfast, but the old man will stick to corn dodgers.

A school boy being asked by his teacher how he should

flog him, replied, "If you please, sir, I should like to have it on the Italian system of penmanship—the heavy strokes upward, and the downward ones light."

Kankakee has a justice who beats them all in the way of doing up a job of matrimonial splicing with neatness and despatch. This is his formula: "Have 'er?"—"Yes."—"Have 'im?"—"Yes."—"Married; $2."

"What a beautiful sight!" exclaimed Mrs. Jones rapturously, as she looked out over the beautiful scenery from a Pennsylvania railroad car.—"Yes," replied Jones, without raising his eyes from his paper, "anthracite."

A married man bought a spring chicken in the market the other morning, and now he thinks the reason it was called spring chicken is because it will take him till next spring to carve it, unless he uses nitro-glycerine.

"Man," says Victor Hugo, "was the conundrum of the eighteenth century; woman is the conundrum of the nineteenth century." An American editor adds: "We can't guess her, but will never give her up—no, never!"

"What's in a name?" Ah, William, you didn't know everything, that's certain. Salt can be bought for a few cents a quart, but call it Chloride of Sodium, and the apothecary will charge you half a dollar for one scruple.

The sporting season has arrived, when the amateur hunter goes into the forest and shoots the farmer's $10 cow, under the impression that it is a deer, and afterward pays the farmer $25 to settle the matter and keep it quiet.

The enemies of the Czar of Russia will attempt shooting him, blowing him up and stabbing him, and still he will live until some day, when he is fooling with a revolver that isn't loaded, he'll get the whole top of his head blown off.

A senior, after vainly trying to explain some scientific theory to his fair inamorata, said: "The question is difficult, and I don't see what I can do to make it clearer?"—"Suppose you pop it?" whispered the blushing damsel.

Lives of grocerymen remind us
They can make their starch half lime,
And with sugar wholly blind us,
Putting sand in all the time.

"Why, you'd better knock the door down. What do you want?"—"Och, my darling! don't let me wake any of your family. I'm just using you knocker to wake the people next door. I'm locked out, dye see, and they've niver a knocker."

Little Rhode Island is sensible enough to pass a law against pigeon shooting.—[*New Orleans Picayune.*] H'm, yes. The shot used to scatter into other States so badly that Connecticut and Massachusetts chickens were in danger.—[*New Haven Register.*]

A lecturer was explaining to a little girl how a lobster cast his shell when he had outgrown it. Said he, "What do you do when you have outgrown your clothes? You cast them aside, do you not?"—"Oh, no," replied the little one, "we let out the tucks."

A native of the Green Isle was pressed by the collector of a water company for payment of the water rate; to which modest request he returned the following answer: "Sure I pay tin shillings a year for wather, and many's the day it's off for a whole wake!"

"Is this my train?" asked a traveller at the Kansas Pacific depot, of a lounger.—"I don't know, but I guess not," was the doubtful reply. "I see its got the name of the railroad company on the side, and I expect it belongs to them. Have you lost a train anywhere?"

Mother (at tea-table): "Jack, who helped you to those three tarts?"—Jack (age seven): "The Lord."—Mother: "The Lord? Why, what do you mean, Jack?"—Jack: "Well, I helped myself, but father said yesterday that the Lord helps those who help themselves."

He was a very stubborn little five-year-old boy. The boy's mother determined to conquer him, and, having administered a severe chastisement, she said: "Will you mind now, Johnny?"—With sobs and cries he replied: "Yes, mamma, I will, but I hate to, awfully."

We frequently hear a lady exclaim, "Oh, dear! I wish I were a man!" but we do not remember ever hearing a man wish himself a woman. No; man never dared allow his wishes so soar so high. He is content to admire rather than be the thing admired. N. B.—This is not taffy.

A little girl passing the Washington Statue, lately, asked a lady who was with her if Washington was buried there. "No," said the lady.—"Where is he buried?" said the little girl.—"I don't know," said the lady.—"Then I guess you don't read your Bible much," said little innocence.

A Tennessee man accidentally shot a dog, and in trying to explain to the owner how it occurred accidentally shot him. A coroner thought he ought to explain how he shot the man, but couldn't get a jury that was willing to listen to the explanation; they were kind of shy of him, as it were.

"Have you any objects of interest in the vicinity?" the tourist asked the Burlington man.—"I have, I have," eagerly replied the other, "but I can't get at it to show it to you. It's a ninety days' note and its down in the bank now, drawing interest like a horse race or a mustard plaster."

"Papa," said he, as he was shown some pictures in a book Santa Claus had left him, "Papa, why does camels have such big hunches on their backs?" The information received not being very satisfactory, he at length solved the difficulty himself. "Why, I know, papa," said he, "it's so's they'll be camels."

Grammar!—Invalid: I've had a wretched night, Mrs. Wobbles.—Nurse: Dear, dear me, sir, I thought you slep' most comfortsble.—Invalid (with a groan): Oh, Mrs. Wobbles, do use the adverb.—Nurse: Yes, sir; I'll see about it directly, sir, but—(puzzled)—I reely don't think there's one in the 'ouse, sir!

A little boy being asked by another boy what he was doing now, replied, "I am cashier in a clothing store."—"You, cashier!" said the other in amazement.—"Yes," said the little chap, "that's what the clerks call me. A hundred times a day they holler 'cashier.'" "Cash! here!" was what the clerks said.

Tradesman to country customer who has come to complain of the quality of his matches: "Not light? Why, I have only to draw them smartly across my cord breeches, and they blaze instantly."—Customer: "Yes, but what's that to me? I can't come a matter of four mile for your old breeches every time we wants a light."

Pat: "Well, Dan, and have ye heard the news—have ye heard that Rory the miller's dead?"—Dan: "Rory the miller is it that's dead now? but ye don't say so, and he was a young man too."—Pat: "Faith, an' that's thrue for ye, Dan; he was such a young man, now, that I expected to see him at my own funeral instead of me going to his."

"Where is your mother!" said a worthy man to a little street miserable. She answered diffidently, "She is dead."—"Have you no father?"—"Yes, sir; but he is sick."—"What ails him?" continued the questioner.—"He has got a sore finger, sir."—"Indeed?"—"Yes, sir."—"Why don't he cut it off, then?"—"Please, sir, he hain't got any money to buy a knife."

An original thinker never thinks the things that other people think.—*New Orleans "Picayune."* But when one thinks that another is thinking things that no other could think, and he thinks he will try to outdo him by thinking greater thinks than he thinks the other is thinking, we think he is about as foolish as we are in thinking of this thing at all.—Boston "*Advertiser.*"

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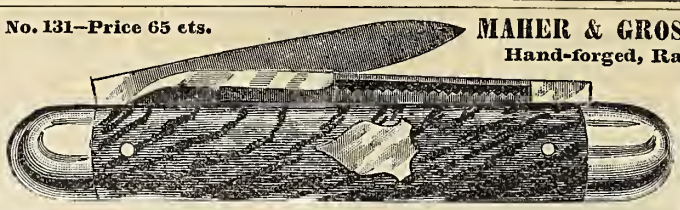

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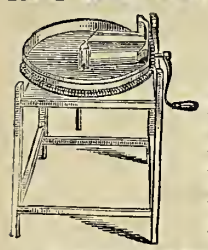

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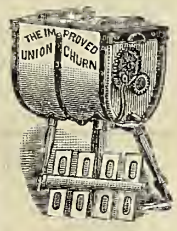

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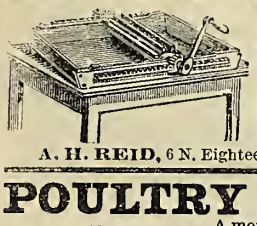

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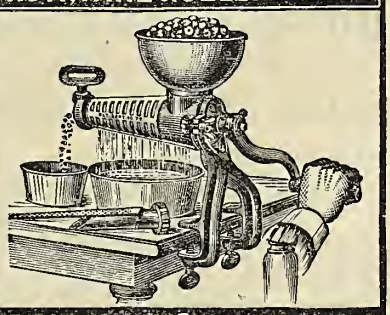

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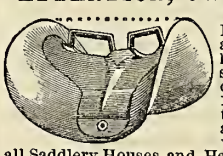

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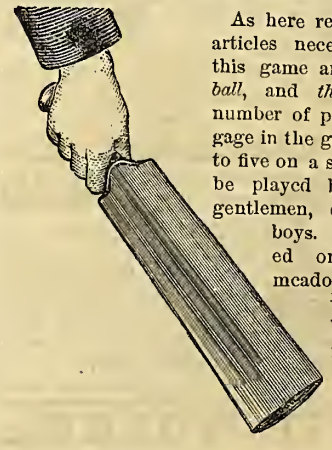

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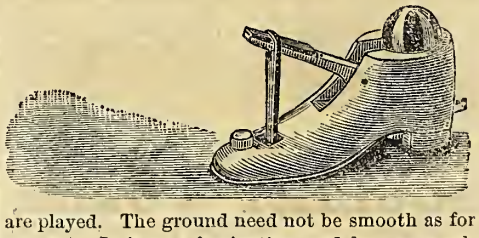

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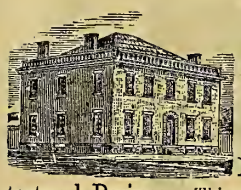

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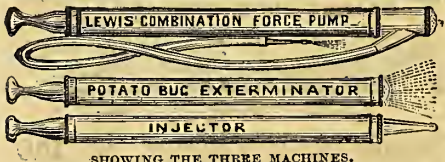

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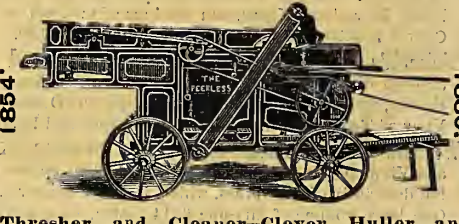

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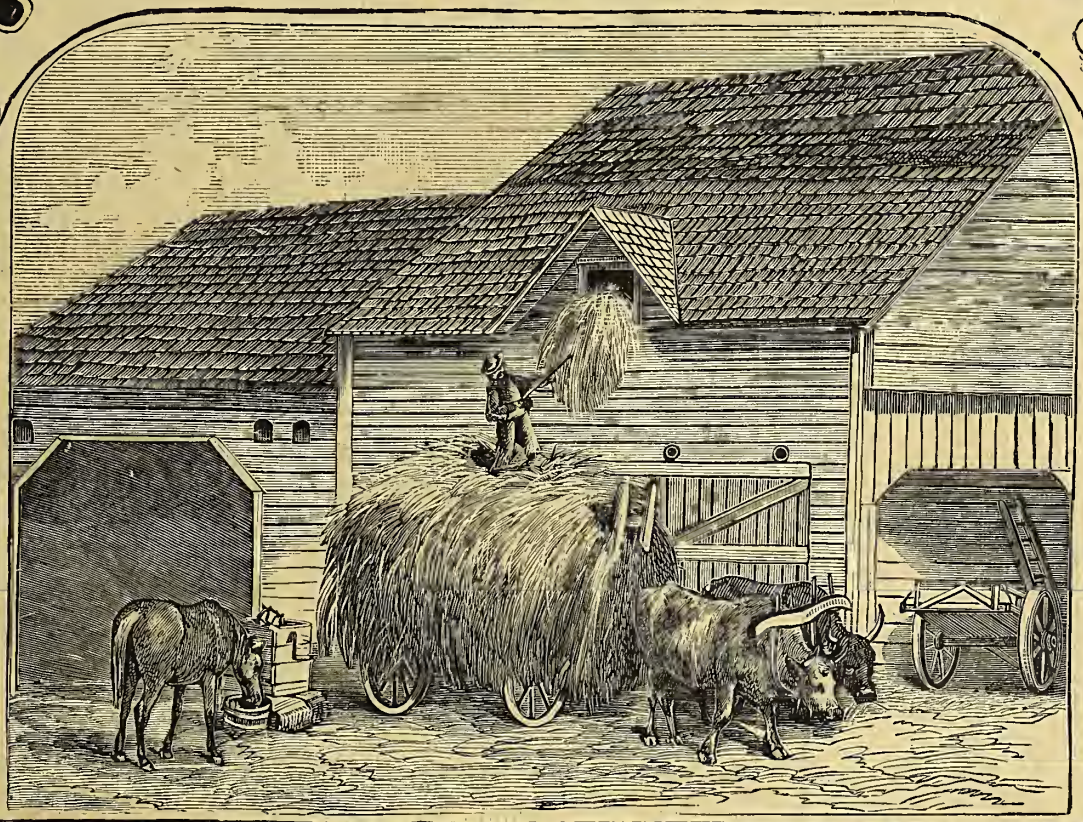

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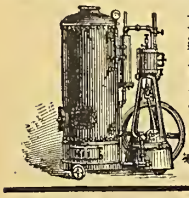

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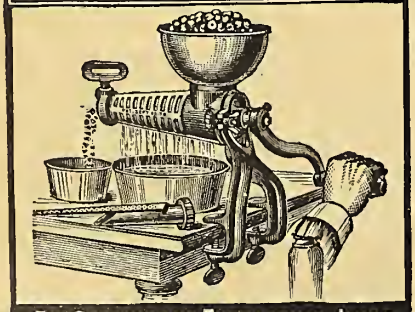

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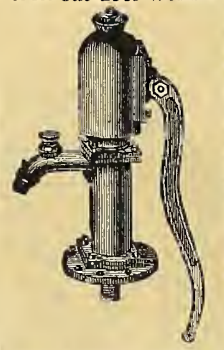

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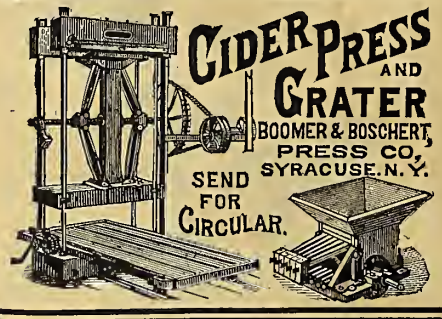

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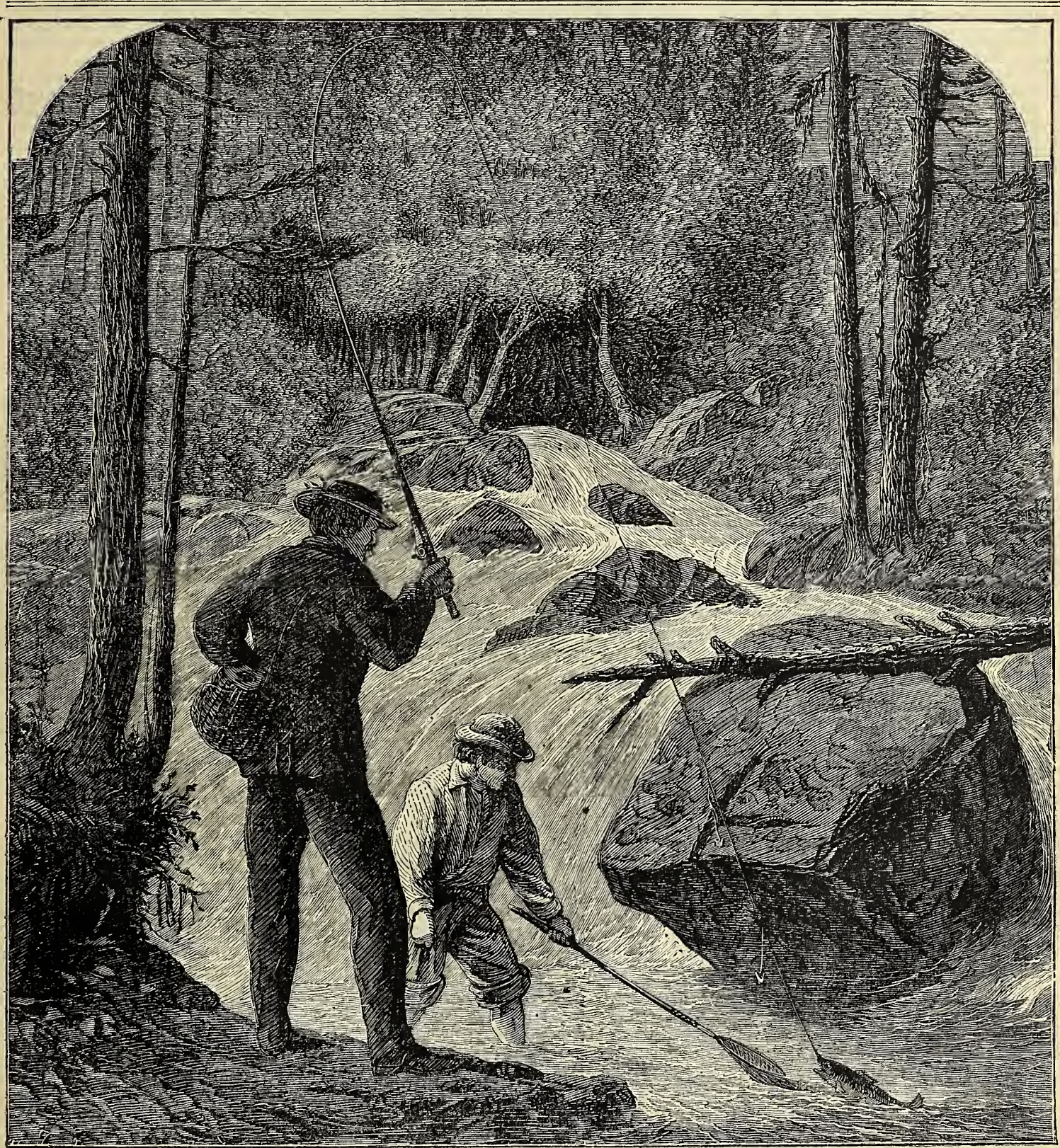

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Calendar for August, 1880.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Mo'n rises.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Mo'n rises.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Mo'n rises.
		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	S	4 52	7 20	0 35	4 56	7 16	0 41	5 1	7 11	0 48
2	M	4 53	7 19	1 26	4 57	7 15	1 32	5 2	7 10	1 39
3	T	4 54	7 18	2 22	4 58	7 14	2 28	5 3	7 9	2 34
4	W	4 55	7 16	3 22	4 59	7 12	3 27	5 4	7 8	3 33
5	T	4 57	7 15	sets	5 0	7 11	sets	5 4	7 7	sets
6	F	4 58	7 14	7 13	5 1	7 10	7 11	5 5	7 6	7 10
7	S	4 59	7 13	7 38	5 2	7 9	7 37	5 6	7 5	7 36
8	S	5 0	7 11	8 2	5 3	7 8	8 2	5 7	7 4	8 3
9	M	5 1	7 10	8 26	5 4	7 6	8 28	5 8	7 3	8 30
10	T	5 2	7 9	8 53	5 5	7 5	8 56	5 9	7 2	8 59
11	W	5 3	7 7	9 23	5 6	7 4	9 27	5 10	7 1	9 32
12	T	5 4	7 6	9 59	5 7	7 2	10 5	5 11	7 0	10 10
13	F	5 5	7 4	10 43	5 8	7 1	10 50	5 12	6 58	10 56
14	S	5 6	7 3	11 37	5 9	7 0	11 44	5 13	6 56	11 51
15	S	5 7	7 2	morn	5 10	6 58	morn	5 14	6 55	morn
16	M	5 8	7 0	0 41	5 11	6 57	0 48	5 14	6 54	0 54
17	T	5 9	6 59	1 53	5 12	6 56	1 59	5 15	6 52	2 5
18	W	5 10	6 57	3 9	5 13	6 54	3 14	5 16	6 51	3 19
19	T	5 11	6 56	4 26	5 14	6 53	4 29	5 17	6 50	4 33
20	F	5 12	6 54	rises	5 15	6 52	rises	5 18	6 49	rises
21	S	5 13	6 52	7 16	5 16	6 50	7 17	5 19	6 47	7 18
22	S	5 15	5 51	7 42	5 17	6 48	7 44	5 20	6 46	7 46
23	M	5 16	6 49	8 9	5 18	6 47	8 12	5 21	6 44	8 15
24	T	5 17	6 48	8 38	5 19	6 45	8 42	5 22	6 43	8 46
25	W	5 18	6 46	9 10	5 20	6 44	9 16	5 23	6 41	9 21
26	T	5 19	6 45	9 48	5 21	6 42	9 54	5 23	6 40	10 0
27	F	5 20	6 43	10 30	5 22	6 41	10 37	5 24	6 38	10 43
28	S	5 21	6 41	11 19	5 23	6 39	11 25	5 25	6 37	11 32
29	S	5 22	6 40	morn	5 24	6 38	morn	5 26	6 35	morn
30	M	5 23	6 38	0 13	5 25	6 36	0 19	5 27	6 34	0 23
31	T	5 24	6 36	1 7	5 26	6 34	1 13	5 28	6 32	1 25

PHASES OF THE MOON.

MOON.	BOSTON.	N. YORK.	WASH'N.	CHICAGO.
	D. H. M.	H. M.	H. M.	H. M.
New M'n	5 11 4 ev.	10 52 ev.	10 40 ev.	9 58 ev.
1st Quart	13 6 58 mo.	6 46 mo.	6 34 mo	5 52 mo.
Full M'n	20 0 34 mo.	20 0 22 mo.	20 0 10 mo	19 11 28 ev.
3d Quart.	27 11 31 mo.	11 19 mo.	11 7 mo	10 25 mo.

AMERICAN AGRICULTURIST.

NEW YORK, AUGUST, 1880.

Hints for the Work of the Month.

[*The Hints and Suggestions in these columns are never copied from previous years, but are freshly prepared for every month, from the latest experience and observations, by practical men in each department.*]

It is to be remembered that the *American Agriculturist* circulates over a vast territory, and it follows, from the great difference in the seasons, etc., that these hints must be of a general character. Good judgment must, therefore, be used in applying them to any particular section or locality. It is evident that no one rule as to planting, sowing, harvesting, etc., can apply everywhere.

Sowing Wheat.—When wheat follows oats, the oat stubble should be plowed as soon as the crop is removed from the field, otherwise the dry weather, that so frequently comes in early autumn, will make the soil dry and hard, and it then can only be worked with difficulty. Wheat requires a fine, mellow soil, and if any clods remain after the first harrowing, the work of pulverizing the soil should be continued until all clods are reduced to a fine state. The roller and the Disk harrow are both excellent implements in bringing the soil into a proper condition.

Drilling is by far the best method of sowing; it secures uniformity in depth, and saves seed by putting all the grains in a proper place for growth. Five or six pecks of grain is sufficient seed per acre when the drill is used. Of late some farmers are testing the value of cultivating wheat, and their results are almost uniformly in favor of the practice. In sowing, the alternate spouts of the grain drill are closed, and the seed sown in rows about 16 inches apart. It is not difficult to construct a cultivator that will work between these rows by means of which the soil may be kept loose and free from weeds. We wish to receive full reports from those who have been cultivating their wheat the past year.

Seed.—Much depends upon the variety of wheat sown. Of the several kinds now "in the field," the Clawson takes very high rank, and is the one found to be generally preferred in the wheat regions we have recently visited.

Early Sowing is best except when there is danger from the Hessian fly, when the late sowing is preferred, but owing to the poor growth made in autumn only an average crop may be expected from sowing late to escape the fly—it is a choice between two evils, the lesser of which is sowing the seed late.

Rye is not so valuable a crop as wheat; but it has the advantage over wheat of doing well on a poorer soil. It should be borne in mind that a soil that is rich enough to grow a good crop of rye can, by a dressing of 250 to 300 pounds of fertilizer, be made to produce a much more profitable crop of wheat. If the rye is grown for the straw, in special cases, the rye crop may be more valuable than wheat; but as a grain crop the wheat takes the front rank.

Fall Fodder.—White turnips may be sown this month. With the use of manure or artificial fertilizers, an oat stubble may be made to produce a crop of 600 to 800 bushels per acre. These roots make excellent feed for all kinds of stock, and will keep in good condition until January.

For Fall Pasture, rye, or millet, may be sown early this month, on rich and thoroughly prepared soil. If not wanted this fall, the rye will make a good crop for the spring soiling of the farm animals.

Winter Oats have succeeded in some parts of the South, but are not a safe crop for the North. The seed is sown next month, but the preparation for it is now made, and the more thorough the better.

Swamp Lands.—This month and the next are the best for cleaning up the wet, low lands. The thick growth of grass and weeds is first to be cut and burned, when the soil will be ready to break up with a plow. So soon as the soil has been made fine by thorough harrowing, it should be sown to grass seed. Frequently it will be necessary to run one or more

Drains before the soil is prepared for the seeding. During dry weather drains can be dug at much less expense than when the soil is full of water. In making a drain, it must be remembered that its value largely depends upon the thoroughness with which the work is done. A drain to be a paying investment must be a permanent improvement. It is better to make a single drain that will last than a larger number, with the same money, that are imperfect, and will be constant sources of trouble.

Muck.—This valuable material for the barn-yard, stable, and compost heap, can be dug with greatest ease and profit at this season. It may be drawn out into a heap near by, with a team and a dump scraper, where it can get dried out, and afterwards be drawn to the place where it is to be used.

Composts.—There are many waste matters about the farm, and they should be gathered into a heap and there rotted into a valuable fertilizer. Weeds of all kinds that do not contain ripe seeds, and refuse of crops, should go into the compost heap.

Fall Fallowing.—It is wise to plow as much as possible for spring sowing. It is a half-way fallowing, and in so far an advantage to the soil; it is of more benefit to heavy land than light, and the earlier it is done the better. Fall plowing greatly facilitates the farm operations in the spring.

Mangels and Beets.—The root crops need frequent cultivation through August, and as long as the foliage will allow it. Sugar-beets are best if earthed up until the roots are entirely below the surface. Mangels do not require this care in "hilling up."

Potatoes should be harvested so soon as they are ripe, otherwise the tubers may sprout, especially if the weather is wet; they are more apt to be affected with the rot if not removed from the soil as soon as they are mature. Burn the vines.

Cows will need some fresh fodder when the pastures become short and dry. Fodder corn is excellent for this, keeping up the flow of milk through the season. An abundance of cool, fresh water ought to be within the reach of the cows, and also shade from the hot sun of the summer noon-day.

Sheep.—The coupling season begins soon, and a good ram only should be used. If possible, secure a pure blood—a poor ram is poor economy. The

Lambs should be separated from the dams and given a good pasture by themselves. If early lambs are desired for the spring market, a Southdown cross is preferable for quality, though in size the Cotswolds are much larger than the Southdowns.

Swine.—By proper management two litters of

pigs may be obtained from the same sow in a year, and with considerable profit. It is frequently an advantage to have pigs come in August, as they can then be ready as small pork for the holidays. Above all, keep the pens neat and clean.

Horses.—Pasture alone will not be enough for horses at night that are kept at work through the day. A run in the pasture will be beneficial, but a feed of grain should be given before being turned out. Work horses plowing on hot, dry ground are subject to brittle hoofs; this may be remedied by keeping the hoofs soft by an occasional application of glycerine. The shoes should not be kept on too long, otherwise the hoof growth will not be natural.

Clover Seed.—Clover cut early for hay will be ready to cut again for seed this month. The sod may be turned for wheat, and will furnish a large amount of valuable quick-acting plant-food.

Gas Lime, when it can be obtained for the trouble of drawing it away, is worth all it costs. It should not be used fresh, but put in heaps ready for spreading on the land in the spring. In a few months the injurious gases escape, and it becomes a mixture of various compounds of Lime.

Poultry.—The value of pure bloods is now well established. This month is a good time to clear out the old mixed fowls and procure a few specimens of one of the best sorts; both the pleasure and profit of poultry raising will be increased by raising some one or more of the select breed.

Notes on Orchard and Garden Work.

What was said in this place last month, on the need of more frequent intercourse between cultivators is still timely. The season of Fairs is so near at hand that the matter should be thought about and discussed. Fairs are so numerous and communication so ready that one can, by a little forethought, attend several of these gatherings. Be sure to do all that is possible to make the local fair attractive, and do not refrain from exhibiting because you think some one else may show something better of the kind. Show the best you have, and if another does better, try and learn how he did it. If a premium is awarded you for any article, no matter if it is only 25c., be sure and take that money. One way to destroy interest in a fair is for the few who think that they can afford to do so, to treat the awards as if they were of no consequence. If the fair is well attended by fruit growers, or those engaged in gardening of any kind, try to get up a meeting of such persons for an hour or so, for discussion and interchange of experience. A beginning, however small, in this direction, may lead to excellent results hereafter. This is but one of several methods by which even a small fair may be made an occasion of real interest.

Orchard and Nursery.

It is now the time of year when returns are coming in for the work of the earlier portion of the season—the early apples, pears, etc., are ready for market. If one with fruit to sell could visit the city markets, he would learn by observation the importance of what seem to be trifles. It will not take long to learn that much depends upon a careful

Sorting of the Fruit.—At least three grades should be made, the "Extra," "No. 1," and a third sort, which in most cases, unless the fruit is very scarce, should not reach the market. Usually it does not pay to market the fruit as it comes from the tree—the greater the uniformity of the fruit all through the package the better it is for the producer.

Packages.—Very much depends upon the way the fruit is put up for the market—the size and shape of the packages, that they may be easily handled. The neatness of the package, with a plain label, goes far to secure the best prices at the market. Half-barrels, crates, and baskets, are the packages most used for early apples and pears and the last two for peaches. Whichever of these is used, the fruit should be packed in firmly to avoid the bruising that would otherwise follow from shaking.

Peaches require judgment in picking: the longer the time before they will reach the consumer the harder they should be. A single over-ripe peach in a crate spoils the looks of the whole package, and though the fruit in the main may be first-class or "extra," it can only pass for poor. The poor specimens are as the weak links in the chain by which the value of the whole is estimated.

Pickers.—Persons who care nothing for the trees, and so tear and break the limbs that they look as if a hail storm had visited the region, are not fit to have in an orchard. It must be remembered that there are seasons to follow, and the trees should be treated with care accordingly; only the careful pickers are profitable pickers.

Early Pears require more care than other fruits, as they ripen and decay so quickly. They must be picked before they become at all mellow, and marketed at once. If for home use, they are best picked early and ripened in the house.

Budding.—So soon as the bark of the stock will raise easily, and the buds are mature, the budding may be done. A sharp knife with a thin blade, and the inner bark of the Basswood in thin strips for tying in the buds, are needed. Success depends upon having the bud fit closely to the stock, and this must be kept in mind in tying them with the bast.

How to Bud.—In the Notes for August, 1877, we gave full directions, with illustrations, of the process, which will guide any intelligent person in the work. As we can not repeat every year, this number can be had, by those desiring it, for 15 cents.

Seedlings, of evergreens especially, require shade during the hot weather. Leafy branches of trees will serve this purpose if nothing else is at hand.

Young Trees require a mulch at this time to protect them from drying out at the roots.

Insects.—The "worms" of the Codling Moth are now in the "windfall" apples, and they should be fed to the hogs. The bands upon the trunks of the trees, as mentioned last month, will need to be looked to once a week and the "worms" killed. For treatment of Borers, see Notes for July.

The Fruit Garden.

Blackberries for the market should be picked before they are fully ripe—for home use they may remain on the canes until dead ripe. The new shoots for next year's fruit having been selected, the rest of the suckers should be treated as weeds, and the old ones cleared away so soon as the fruit is off. The young canes should be stopped by pinching at the hight of 6 feet, or even lower, that branched and stocky plants may be secured. Three or four such canes are enough for each stool.

Raspberries will need much the same treatment as the blackberries. Pinch back young canes to 4 feet or less; clear out old ones after bearing.

Grape Vines.—If mildew makes its appearance, the vines should receive a thorough dusting of Sulphur at frequent intervals until it is subdued. A still morning is the best time to do the dusting, using a bellows to throw the sulphur on to the under-side of the leaves. The presence of mildew is known by the white spots which it makes on the leaves, and afterwards, if not attended to, upon the clusters of fruit. Pinch back *laterals*, as directed in previous Notes.

Insects of whatever injurious kinds, will have to be fought. The large caterpillars and beetles on grape vines are best destroyed by hand-picking.

Strawberries.—Early formed plants from runners rooted in pots, may be expected to bear a good crop next year. Ordinary plants set in the ordinary way this fall may give a few berries next season, but not a full crop until the year following. The old beds should be well manured and kept clean of weeds.

Kitchen and Market Garden.

Weed killing will still be required, though most of the crops are beyond injury from them. A weed that goes to seed now—and they do very rapidly—means a full supply of young plants to stock the ground for another season. If the crop is removed from any portion of the garden, an occasional run of the cultivator over it will keep the weeds down, and at the same time improve the soil. It is better to sow such places with some late crop, such as

Spinach, Late Turnips.—Spinach to be wintered should not be sown until next month. "Yellow Stone" and "Aberdeen" are good turnips to sow now; the Strap-leaf will do if sown next month.

Beans.—It is not well to hoe beans when the vines are wet, as it is said to make them rust. For pickling or salting, the "Refugee" is best. Sow "Early Valentine" for a late crop of snaps. The stems of Limas need pinching off when at the top of the poles.

Beets need frequent hoeing and thinning. Use the young plants for greens.

Cabbage and Cauliflower.—Set for late use. The "worms" are best removed by using hot water (180°), sprinkled over the plants through a fine rose.

Carrots to do well require clean culture. When too large to hoe, pull the weeds that show themselves.

Celery should be set out at once, and in well manured moist soil. Hoe earlier plantings frequently.

Corn for late crop should have the soil kept open, mellow, and free from weeds. So soon as the ears are picked the stalks may be cut and fed to the cows or other stock, or cured for winter.

Cucumbers.—The soil should be cultivated so long as the vines will allow of it, after which hand-pull the weeds. Gather the fruit for pickles when of the size of the fore-finger—some prefer them smaller. Always cut with the stem left on.

Egg Plants.—Keep clean of weeds, and place straw under the fruit to keep them from the ground.

Melons.—The late sets will not mature; therefore pick them off, that all the nourishment may go to the earlier ones. A mulch of straw just before the vines begin to run will keep the fruit from the ground. A more uniform ripening is secured by occasionally turning the fruit when near maturity.

Onions.—Harvest the crop so soon as the tops die, and after being well dried, store in an airy place.

Potatoes should be dug so soon as ripe, which is known by the dying down of the vines. Clean the ground of all weeds.

Seeds.—In a small garden where there are several varieties of one vegetable, it is almost impossible to keep the kinds distinct, and as a general thing it is better to buy seeds of those who make a business of growing them. If any are to be saved, let it be from the best and earliest.

Squashes.—Pull out the large weeds after hoeing is over; and watch for any injurious insects.

Sweet Potatoes.—Vines should not root at the joints, as small potatoes form there at the expense of the large ones. Move the vines when hoeing.

Tomatoes.—A cheap frame of some sort should be provided to support the vine and keep the fruit from the ground; if nothing better is provided, use brush or straw for the fruit to rest upon.

Flower Garden and Lawn.

In a dry time it is well not to commence watering unless it can be done thoroughly and copiously; a mere sprinkling of the foliage does but little good. Where a general watering is not practicable, those plants that seem to suffer most should have the surface earth drawn away, the ground well soaked, and then the dry earth returned. The neatness of the beds will depend largely upon careful trimming and pinching, especially if designs are attempted in foliage plants. The lawn will need the weekly visit of the lawn mower.

Dahlias, Tuberoses, Gladioluses, etc., will need stakes for the support of their flower stalks.

Large Weeds in the lawn are best removed root and all by using an old chisel fixed to a handle.

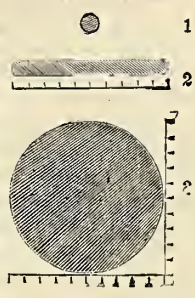
Walks and Drives need to be raked occasionally, and the edges trimmed to look neat and clean.

Greenhouse and Window Plants.

Whatever repairs are needed about the greenhouse should be made before the time for taking in the plants. The heating apparatus should be looked to that it may be all right when needed. The wood-work of the houses should be thoroughly washed; and a supply of pots, labels, potting material, etc., provided before the busy days of autumn are at hand. The propagation of many plants for winter may be going on, that a good stock may be in readiness for decoration of the house.

The Compound Microscope—Answers to Questions.

In several hundred letters recently received are numerous queries which are mainly answered by the following: The "magnifying power" of a Simple or Compound Microscope is usually stated in *diameters*, that is, the increased size shown in *one* direction. For example, a small dot (fig. 1), seen in an instrument magnifying only 10 diameters, is stretched out one way as seen in fig. 2. But it is magnified in every other direction just as much, as shown in fig. 3. That is, its area or surface would be seen covering about 78 times as much space, while a small object seen through a microscope magnifying 100 diameters, would cover a space over 7,800 times as great as the object itself. This of course brings out many thousands of points, lines, and parts, too small to be seen by the unaided eye. (The *American Agriculturist* Compound Microscope, by the use of single and double lenses and the draw-tube, can be arranged to magnify all the way from 25 diameters up to 150 or more, and works very clearly for 125 diameters, which is equivalent to magnifying the area or surface over **12,000 times!**



The power and definition of this instrument is sufficient for all ordinary uses of amateurs and professional men. Those desiring higher power for special scientific investigation, can be supplied with achromatic "French Triplet" lenses, having screws to fit this instrument, and of almost any power desired, up to 300 or 400 diameters or more, at a cost of $3 to $10, according to the special power desired.

This Microscope has a concave mirror, on a movable arm, allowing it to be turned *under* the stage to concentrate light under or through transparent objects; or at one side *above* to throw light down upon opaque objects.

The *Camera Lucida.*—The long-known Camera *Obscura* is an arrangement for throwing an exact image of an object upon a screen in a *dark* room (obscura). The Camera *Lucida* (light) is an attachment to the eye-piece of the Microscope, which throws the magnified image of an object upon a partially lighted screen or paper, so that one can see it well enough to run a pencil over it, and thus make a picture of the magnified object for preservation. This requires only skill enough to pass a pencil over the picture as it shows on the paper. Until the production of this new Microscope, any Camera Lucida attachment for the Microscopes in use, alone cost more than this entire instrument, camera included.

The regular retail price of the *American Agriculturist* Compound Microscope is $15, which is less than half the price of any equally powerful and convenient Microscope previously offered in this country. But it was devised wholly in the interest of the readers of this Journal, and it is supplied to any actual subscriber for $10—or given as a Premium for *Ten* annual subscriptions at the regular rate of $1.50 each.

It has received the highest commendations of many scientific men, as well as many hundreds of our lay readers. (Some of them are given in our pages for June, last year. Prof. Spencer F. Baird, Secretary of the Smithsonian Institution, at Washington, uses one, and has sent many persons to us to obtain them, though by his official position he is precluded from giving a written recommendation of it, as he would otherwise gladly do.)

Other questions received are all answered, we believe, in the illustrated description which is sent to applicants.

Soil Exhaustion.—Dr. J. B. Lawes gives some important notes on the exhaustion of soil as deduced from his famous field experiments. He writes: "It is now exactly forty years since we began to exhaust a portion of one of my fields by continuous unmanured wheat crops; it may therefore be interesting to show the evidence we are in a position to bring forward upon the subject of exhaustion as regards the soil at Rothamsted.... The annual decline due to this cause may amount from one-quarter to one-third of a bushel of wheat per acre per annum. If we take the smaller quantity, and add to it the ordinary proportion of straw, the result would be equivalent to about forty pounds of produce....The amount of matter annually taken from the soil by this forty pounds of produce, including the nitrogen it contains, would be between two and three pounds. The evidence derived from other experiments in the same field, proves that the decline in produce is due to an absence of nitrogen, as also that the minerals are in excess, but the actual amount of nitrogen that this forty pounds of produce would have contained, would be less than one-half pound in weight." This seems like a small matter upon an acre of land, but it is to be observed that in forty years this annual decline amounts to ten bushels of grain. Dr. Lawes concludes that "the gradual decline in the produce is due to the diminishing amount of nitrogen in the soil. It is also evident that the source from which the forty crops obtained their supply must have been the stores of nitrogen already existing in the soil when the experiment commenced; further, it seems most probable that the yield of future crops will depend upon the amount of nitrogen liberated each year from the soil." It is through such long extended and carefully conducted experiments as these of Dr. Lawes that we are to learn the nature of soils, their exhaustion, etc.

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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Reliable Business Men, those who have both the *ability* and the *intention* to do what they promise, are the *only* ones invited to use the business-pages of this journal, and those in charge of that department are under positive instructions to admit no others at any price; and they try to live up to it, and generally do, though once in a while they may make a mistake—to err is human—but *this* seldom occurs. We could make a fortune in a single year, and supply the paper at lower rates, if the advertising pages were thrown open to those who gladly pay high prices, as they can afford to, because they give little for much. But we mean our advertising pages shall be a valuable source of *trustworthy information* to our readers.—When ordering from, or corresponding with any of our advertisers, or sending for catalogues, etc., it is well to state that you are a reader of this Journal. They will know what we expect, and what you expect of them as to prompt and fair treatment.

Attending the Fair.—It will soon be "fair time," and already preparations should be in progress for both attending and making exhibits at one or more of them. There are many reasons why the farmer and family should attend the fairs. It is a source of both instruction and amusement to old and young. Many a lad has had his interest kindled for improved machinery, live stock, fruits, etc., by attending the fair.

What is the Use?—If "J. B. H.," of New Holland, Ohio, had signed his full name, he might long ago have had an answer by postal card—telling him that there were probably no Cashmere Goats in the country.—There was nothing in the question that "J. B. H." need be ashamed of; even were he candidate for President, no capital could be made against him. What is the use of writing letters and omitting to sign them? The general fate of such is the waste-paper basket. If a letter is not of sufficient importance for the writer to sign it, it is of no sort of importance to us, and three cents may be saved if the writer puts it into his own waste-basket.

Drink for Hot Weather.—In England, and largely elsewhere, a drink is made by mixing oatmeal with water, three or four ounces to a gallon. It is found to satisfy the thirst as well, if not better, than pure water. The oatmeal is a nutritious food, and when taken with the water, while it is pleasant to the taste, the mixture makes a "victuals and drink" that is commendable. We like it, and have taken many a drink of it in the hayfield, or while hoeing the corn, etc. The Mexicans use upon long journeys, and herdsmen and the poorer laborers live upon, a food called *Pinole* (pronounced pin-o-lee, with the accent upon the o). Corn is parched, or roasted (not popped) and ground into meal, sufficient sugar is added to pleasantly sweeten it, and cinnamon or other spice is often used to give a pleasant flavor. In this the grain is thoroughly cooked, and only needs to be mixed with water, and one has a hearty meal ready at once. It is mixed with water sufficient to form a mush, or it may be used with a larger quantity of water, to form a gruel, which we know to be a most refreshing drink.

Sorrel.—"P. R. H.," Summit Co., O., asks how to exterminate Sorrel. He says that some in his vicinity say that it is due to "sourness in the atmosphere." We have often heard it ascribed to a sour soil, but not before to a "sour atmosphere." The best way to get rid of sorrel is to improve the soil, and encourage the growth of grass to crowd it out. The idea that Sorrel, or any other plant, can take up acidity from the soil is erroneous. Sorrel and Sugar-beet, grown side by side, will be sour in one case, and sweet in the other. Both the acid and sugar are formed in the plant, not taken up by it.

Great Increase of Immigration.—A circular issued by the Bureau of Statistics at Washington, shows that the number of immigrants arrived in New York for the year ending May 31st, 1879, was 92,351. The number for the year ending May 31st, 1880—236,017.

Blossoms, but does not Bear.—Every now and then some one asks what can be done with a grape-vine that flowers freely, but will not bear a cluster. Either graft a good kind upon the root, or set out another to take its place. Some vines are imperfect in their flowers, and nothing will make such produce fruit.

The American Association for the Advancement of Science.—"What's in a name?" Had the poet asked with reference to this one, the correct answer would have been—four dozen letters. The Society must have more than usual vitality, as it has carried that name about the country for over 28 years, and will hold its 29th meeting at Boston, on the 25th of the present month. The annual gatherings of this body of scientific workers are most pleasant occasions. Its members number nearly 1,000, and as those who attend are usually accompanied by their wives and daughters, the meetings are quite as social as scientific. Workers in every department of science get together once a year to tell what they have been doing. There is such a number that they divide up into several sections, so if one finds the doings in one section not to his taste, he can go to another. As the Association is hospitable to all listeners, our friends in Boston and vicinity, even if not members, will find the sessions, as a general thing, instructive and enjoyable. Boston is a capital place for such a gathering; its people are used to entertaining crowds, and know how to do it. F. W. Putnam, Salem, Mass., is Permanent Secretary, who will give all needed information to those intending to attend this interesting and instructive meeting.

The Coming Fairs.—Our Fair-List is made up largely from the announcements sent us by officers of the Societies holding them. A large number of premium lists and other announcements of Fairs have already been received and placed on file.—To the Secretaries of all others we would say, please send the *date* and *place at once.* The *State*, County, and Town, as well as the date, should be clearly and accurately given. Also the Secretary's P. O. address.

Muck: Dig it Now.—The dry weather which usually comes in late summer makes this a good time to get out a supply of muck. This valuable absorbent for liquid manures, when of the best quality, contains a large quantity of nitrogen, which, when decomposed in the compost heap, makes of itself a large amount of valuable plant food. As a source of manure, it is of importance.

"What is This?" is a question that is, of course, a familiar one to us. For example, it comes to our table together with an object which may be described in brief in something like this wise. It is about two and a half inches long, and half an inch in diameter, chestnut brown in color, round, tapering at both ends; from one end, the head, proceeds a long, curved proboscis, like a jug handle, while the opposite end is divided into a number of rings. It is alive, because it moves its ringed extremity when touched; but it is entirely helpless, for it goes without taking any food. This is the pupa, or chrysalis, of the "Tomato Worm" that is so destructive to the foliage of the tomato and several other plants. When the mature insect comes out of the pupa case it will be a large and handsome moth, of an ashen-gray color, with bright yellow spots on its body, and a very long tongue, which, when not in use, is coiled up under its head.

"Pig in the Clover."—A farm is not complete without pigs; and pigs are at their best in a field in which they have green food to pick, and a field is often the most profitable when it is growing a good crop of tender clover. The green food the pigs get acts as a corrective to their feed at the trough. Pigs that are getting clover or grass can be fed corn without the injury it would do them were they confined closely in pens and deprived of green food. When the grass is short, a feed of fodder corn is important, and especially so for sows that are rearing young pigs, as such green food increases the milk and keeps both sow and pigs in a healthy condition.

Some Things this Number Contains.

The Hints for the Work on the Farm and in the Orchard and Garden, pages 294, 295, will aid all cultivators.

The Third Prize Essay on KEEPING ONE Cow is of special value to our Southern readers, showing how much a half acre may be made to yield; pages 310–311.

The House Plan will meet the wants of many who live where they can get stone cheaply; page 304.

The Talk about "Patent Medicines," and the Quackery connected with them will interest many, and should be read by all; pages 300–301.

The Editorial Correspondence, pages 301, 302, 303, makes a valuable collection of suggestive items of information.

The Sheep Rot, and many Hints and Helps for Farmers, etc., pages 308 to 312.

Flowers, Plants, Insects, etc., pages 313–314–315.

The Famous Jersey Cow, "*Eurotas*," page 305, will interest the hundreds of thousands who have cows.

The Household contains a variety of information, including Faith Rochester's Notes; pages 316–317.

The Boys and Girls will read pages 318–320.

The Basket is large; pages 296 to 300, and 325 to 329.

Crop Prospects.—*Wheat:* Owing to the open winter much of the wheat was seriously injured, but the weather of early spring was in its favor. A large area of the winter-killed wheat in the Northwest was re-sown to spring wheat, which did very well. The increased acreage of wheat and its uniform good condition seems to indicate a crop exceeding the 440,000,000 bushels of last year. *Rye:* The acreage and yield are both larger. The poorer soils of New England, that do not give good crops of wheat, have produced a large yield of rye. *Barley:* The yield is reported good everywhere, and the crop may be expected to be in the neighborhood of 50,000,000 bushels. *Oats:* The yield will be heavy, and the acreage, especially in the Southern States, is far greater than in previous years. An aggregate crop of 450,000,000 may be expected. *Hay* is very light, owing to the dry weather that has so generally prevailed, and the price will be high. A substitute in fodder corn or Hungarian grass must help out in the winter feeding of stock. *Potatoes* are a fine crop; though the Beetles have been abundant, they are now so easily handled that potatoes are again one of the sure crops. *Fruits:* This is the bearing year for apples, and a good supply may be expected. Pears are a light crop; and peaches are not more than an average. Grapes are excellent.

Excelsior for Packing Fruit.—"Excelsior" is the trade name given to fine wood shavings, made originally, we believe for the use of upholsterers as a substitute for hair and other expensive materials, in stuffing mattresses, sofas, etc. It is elastic and perfectly cleanly, and if made of the proper woods free from odor. Such a material has naturally been found adapted to other than its original uses, and is now largely used for packing various small wares. The latest application we have noticed is in packing peaches. Peaches for a near market need no packing, but the growers in Georgia seem to think it necessary to use something with their fruit and have hit upon Excelsior. Whether it is necessary or not, the fruit packed in shallow crates, with a layer of Excelsior above and below them, reaches the market in as perfect condition as those from much nearer points.

Coal Tar for Insects.—"T. D. P.," Madison, Wis., initials that many will recognize as those of a well known pomologist, writes that he finds water impregnated with gas-tar a simple and sure remedy for the destruction of bugs and worms on all kinds of plants. He says "it should not be used too strong," and this leads us to ask him how we are to fix upon the proper strength.

Gasoline, Naphtha, Benzine, are names for very similar products obtained in refining petroleum. When crude petroleum is put into a still, and the heat gradually raised, that liquid which distils off at the temperature of 170° is called Gasoline; that which distils at 280° is Naphtha. The liquid which distils at 300° is Benzine, while properly prepared Kerosene distils only at 400°. Gasoline, Naphtha, and Benzine are very similar liquids, differing in their specific gravity and boiling points. There is a still more volatile liquid than Gasoline, obtained in small quantities, viz.: Rhigoline, which boils at 100° or less. As there is but a limited demand for these products in the arts they accumulate on the refiners' hands, and are sold at very low prices. There is a great temptation to unscrupulous retailers to buy these cheap products and mix them with kerosene; though the law has largely checked this adulteration, it is still more or less done in defiance of the law, and kerosene bought of unknown persons should always be tested before risking its use. These products, Gasoline, Naphtha, and Benzine, have high illuminating and heating powers, and being also very cheap, it is natural that many attempts should be made to utilize them for lighting and as fuel—and various lamps and gas generators, as well as stoves, have been invented for the purpose. We have examined a great many of these, but have not only not seen one that we could commend, but we have refused to advertise them, as we regard all that we have examined as unsafe and their use attended with danger. The inventors show very clearly that no explosion can take place in their lamps or other apparatus, as they have guarded against this at every point. Still there remains the fact that their use requires the storing and handling of liquids that are unsafe in a high degree, and should never be trusted, as such things will be, in the hands of ordinary "help." The following is cut from the "N. Y. Evening Post" for May 26th last:—"Mrs. Frances Jones, of Piqua, O., had a barrel of gasoline in her cellar to be used as fuel for a gas stove. Yesterday morning the barrel seemed to be leaking, and F. W. Amendt, a neighboring grocer, and two boys named Perdue, about sixteen and twelve years old, respectively, went into the cellar to see what was the matter. One of them struck a light, and instantly an explosion occurred, which shattered the building from cellar to roof, and threw a mass of brick and shingles fifty feet in the air. The two Perdue boys, Mr. Amendt, and a lady in the house, received fatal injuries."—Such casualties occur every now and then, and so long as these articles are in use with the present means for keeping and handling them, they will continue to occur. The fact that such "accidents" are possible, seems to us sufficient to justify our position in relation to the articles and all contrivances for their use.

Weights and Measures.—R. Forest, Out., Canada, thinking "we have much need of a change in our weights and measures, the present system being too complicated," sends us the system he proposes, and asks us to publish it, and invites those who differ from his views to discuss the matter with him in our columns. We must decline both to publish the system, and to give room for its discussion. When one takes up a subject of this kind, he should first learn what others have done before he proposes a method of his own. The subject has been thoroughly investigated and discussed, and systems vastly preferable to that of Mr. F. have been proposed. The trouble is not in the lack of better systems, but in the reluctance of people to make a change.

Sending Fruits.—A large share of the specimens of fruits sent each season for our inspection, are perfectly useless when they reach us. Fruit sent by mail in a paper box, if it is not thrown out by the way, is so badly bruised when it arrives as to be past recognition. Fruit by mail should be in a wooden or tin box, and so closed that it can be opened for inspection; nails, tacks, sealing wax or gum, subject the parcel to letter postage. Do not use a cigar or perfume box, or any other that will give the fruit an odor or flavor; do not use cotton for packing any soft fruits. In sending by express, pay charges in advance—we have done paying such.

Fish Culture, it has been supposed for years, would do for an amusement but not as a business except in a few rare cases. Very great progress has been made in the artificial growth of fish, largely through the exertions of the United States Fish Commission, which has, among other things, distributed, within the last year, a large number of the European Carp. We should be pleased to hear from some of those persons who have been most successful in the growth of this remarkable fish. Perhaps the California people can make as good a report as any—at least we infer it from the notes in the Pacific press.

How Large a Grape Vine can be moved with safety? asks "J. M. W." If the question refers to the safety of the vine, if well cut back, a vine as large around as one's arm may be moved and live, but it will be a very unprofitable job. If the writer would ask how large a one may be moved with profit, that will depend upon what kind of treatment it has had, and its present condition. As a general thing it rarely will pay to move an old vine. A new one is obtained so easily, will grow so rapidly, and in a few years be so much better than an old vine, that has been moved, that it is better to start anew.

Questions about Grafting.—"W." asks how large the cions used in grafting should be. The shoots of the previous season's growth are used, and these vary in size with the variety and the vigor of the tree from which they are cut. The average is about the size of a lead pencil, or somewhat smaller. He asks if more than two cions can be inserted, and how if but one should grow? In what is known as crown grafting, more than two can be put in, but it is rarely done. If but one of the cions should grow, remove the dead one. One, in a majority of cases, is enough, and where two grow it is often one too many.

Interesting Figures.

Many unmathematical persons "hate figures," and hastily skip over any article or item that presents any array of them. But, very often, a few numbers stand for and represent great and important facts in the commercial and industrial prosperity of our country, and can but be of great interest to every one. The very condensed tables at the head of our Market Reports in every paper, give at one view the summary of an immense number of transactions in Breadstuffs. For example, this month we find the receipt, during 24 days, at the port of New York alone, of **14,867,000** (nearly *fifteen Million*) bushels of grain, reckoning each barrel of flour as five bushels of wheat, or 3,195,000 bushels more than during the same period last year.

But the SALES have been on a still greater scale. The summary of 24 days transactions show sales to the enormous amount of **36,969,000** bushels—a million and a half bushels for every day!

The Exports. The first line of table **4,** shows that during the first half of this year, including eight business days in July, there have gone abroad from the New York port alone, an equivalent of no less than *Sixty-four Million* Bushels of grain. From Jan. 1, to July 9, 1880, the total exports from New York alone ran up to nearly a round **$200,000,000** in value ($199,704,348) and for the year ending July 1, 1880, the exports (from New York alone), reached **$400,798,000!**—The exports for June amounted to $43,084,568—the largest amount ever sent abroad in the history of the country, we believe, during one month. All the above figures will be greatly swelled when we get returns from Philadelphia, Baltimore, Boston, New Orleans, Charleston, San Francisco, and other shipping ports.

To help the conception, suppose the above 64,000,000 bushels of grain exported from New York this year up to July 9, had been brought here on wagons, 40 busbels to the two-horse load. Three million two hundred horses would have been required, and one million six hundred thousand drivers. These wagons arranged in a line, allowing 50 feet to each, for wagon, team, and headway, the line would extend **15,151** miles, or make up nearly five lines of teams all the way from the Atlantic to the Pacific Ocean.—Put 250 bushels of grain in each railway car, and allow only 30 feet to a car. To bring this 64 million bushels of grain would require a continuous freight train of 1,455 miles, allowing nothing for engines. This would closely cover a track from New York to Omaha, or about halfway across the Continent! Note that we only speak of exports of our surplus, and from New York alone, during six months. *This is allowing for only about* ONE *bushel out of every* THIRTY *bushels of corn and wheat grown in this country during* 1879.

A FEW COMPARISONS.

Taking the Census Report of 1860, and comparing it with the estimates for the year just ended (July), we have the following figures, showing the wonderful expansion during the short period of 20 years, in our country:

	1860.	1880.
Corn produced, bushels	838,792,740	1,450,000,000
Wheat produced, bushels	173,104,924	440,000,000
Wool produced, pounds	60,264,913	232,500,000
Cotton produced, bales	4,823,770	5,675,000
Hogs packed, number	2,350,822	6,950,451
Iron produced, tons	919,770	3,070,875
Petroleum produced, barrels	500,000	19,741,661
Gold and Silver produced	$46,150,000	$79,711,990
Wheat exported, bushels	4,155,153	175,000,000
Corn exported, bushels	3,314,305	100,000,000
Butter exported, pounds	7,640,914	38,248,016
Cheese exported, pounds	15,515,799	141,654,474
Merchandise exported	$316,242,423	$835,000,000

Canned Meat.—During the hot weather many families experience considerable difficulty in keeping a supply of fresh meat. Without a refrigerator or an unusually cool cellar, meat will spoil in a very few hours. As a substitute, meat may now be bought in cans which may be opened at any time. The canned meat industry is now a very large one. It is estimated that fully three hundred thousand head of cattle are annually slaughtered in Chicago alone to supply the demand for canned meat.

The Preservation of Corn Fodder in Silos.

Soon after the plan of preserving corn fodder in tanks or *silos*, was published in France, the *American Agriculturist* gave a full account of the matter, and reproduced the engravings of the structures used by the inventor. These will be found in June 1875; and in April 1879, we gave an engraving of a machine invented in this country for the wholesale cutting of the fodder. Besides there have appeared from time to time other articles upon the subject. The matter for two or three years appeared to receive but little attention on the part of our farmers, but since accounts of some successful operations in this country have been published, there is a widespread interest, and there is no subject upon which we have, just at present, more inquiries than those relating to this. "The Ensilage of Maize," which is very nearly the French name for the process, seems to be very generally adopted in this country. *Silo*, is the French word for a "pit,"—*Ensilage* means the putting into pits. As the pits are built above ground, they have been called "tanks," and we have known the "tanking of corn fodder," used to express the operation. In view of the general desire for information we will endeavor to present next month, the substance of what has already been given, and such other matter as will allow those who may wish to do so to experiment understandingly. The preservation of green fodder in a like manner is by no means new; clover has long been similarly stored, and so have beet leaves in the sugar-beet fields of Europe; in this country brewers' grains, and partially ripe Broom Corn seed have also been thus preserved. It is applying to the preservation of corn fodder the same principle that nearly every house-keeper makes use of in preserving fruits. Every one knows that if green corn fodder, or other green vegetable matter be placed in a heap, fermentation will take place and decay soon follow; fermentation and decay require the oxygen of the air; exclude the air and these must cease. In Ensilage the corn fodder is put away with the air excluded and it keeps. Every detail of the operation has for its object the thorough exclusion of the atmosphere; the silos, or tanks are tight; the fodder cut small, that it may lay more compactly, and great pressure put upon the mass, all for the purpose of keeping out the air as completely as possible. That the fodder thus put up will keep in excellent condition is an established fact; it has been kept thus not only through the winter, but throughout a whole year.

Do we advise farmers to put away their corn fodder in this manner? Yes and no, and mostly no. Dairy farmers who carry on business with a sufficient capital, may incur the necessary outlay with a prospect of a fair profit on the investment, and the same may be said of those farmers who carry a large number of animals and can afford to make the investment. But with the average farmer, the case is different. No half-way work will do, the silos must be air tight or their contents will spoil; a large mass of corn fodder must be cut fine, and all at once, and to do this requires an outlay for machinery and power, which most farmers cannot command. There must be a large number of animals to consume the fodder profitably, when a silo is opened and the contents exposed a change takes place, and the consumption must of necessity be rapid or there will be a loss. We look upon the process as one that, so far as the average farmer is concerned, has yet to be Americanized and adapted to his circumstances and needs, and it is in this direction that we would encourage experiment. For large operations the present methods answer; we now wish to have a process by which one who keeps from two to six cows can prepare his silos, or preserving receptacles, with but a moderate outlay for materials and with ordinary labor; and the process needs to be otherwise so modified that the cost of putting away his fodder by this method will not more than offset its advantages. That this may be accomplished is our sincere hope. But at present it will be a great step if the discussion of the matter leads farmers in general to make better use the means they have. But a small share of the labor required by Ensilage, applied to saving the fodder they already have, would result in great gain. Leaving the matter of fodder corn out of the case, the matter of corn fodder deserves far more consideration than many give it; in the cutting up of the corn at the proper time and the care of the stover after husking, there is abundant room for improvement.

Yellows in the Peach.—There is no remedy for the destructive disease known as "Yellows" in the peach tree. When a tree is once attacked it should be dug up and burned root and branch, otherwise the trouble will spread to other trees and in a short time the whole orchard is ruined.

Entomologist for New York.—The State of New York has at length a State Entomologist, Governor Cornell having recently given the appointment to Doctor Lintner of Albany. There was a movement on the part of some of the friends of Prof. C. V. Riley, now Chief of the U. S. Entomological Commission, to secure him as the New York Entomologist. Learning of this, Prof. R. wrote to Governor Cornell, declining to be considered as a candidate, and strongly urging the appointment of the present incumbent, Doctor Lintner. We are glad that this, which may be made one of the most important scientific positions in the country, is thus secured to a competent naturalist, and kept out of the hands of semi-scientific pretenders.

The Farmer of the Future.—Prof. Wrightson, in his inaugural lecture before the students of the Wilts and Hants Agricultural College, at Downton, near Salisbury (England) said, among other things, that: "The farmer of the future must then be a man of resource; he must be ready to adapt himself to new circumstances and to adopt new crops when he finds he is undersold. He must look upon the soil and air as his agents for the production of animal and vegetable forms, the precise type of which must depend upon the laws of supply and demand. If an ironmonger finds that he has a strong competitor in the sale of locks, he turns his attention to lamps or to something else, and so must the farmer."

Sundry Humbugs.

In these days of summer showers and storms, accompanied by lightning and thunder, there cometh the Lightning-Rod Man. Other humbugs come and go; other frauds become known and cease to be profitable, but the Lightning-rod swindle is perennial. People are most easily humbugged in matters about which they know least; there is scarcely any thing—if we may call it a thing—of which there is so little accurate popular knowledge, as electricity. It is true that to the best informed there is much about electricity that is obscure, but its important facts and laws may be easily understood, and it is a great pity that they are not generally known. A lack of this knowledge in the community allows various electrical humbugs to succeed, from the ridiculous little so-called Batteries we recently exposed, up to the ubiquitous lightning-rod man.

THE LIGHTNING-ROD SWINDLE

has two principal features. The lack of a knowledge of a few simple facts in electricity, allows the so-called agent to make people believe that safety lies only in using his particular style of rod—usually some outlandish "doubled and twisted" much insulated and variously bepointed affair that makes a house look somewhat like a gigantic hatchel, if one is so unfortunate as to allow the thing to be put up. The other feature is, that it is usually made the medium of some form of down-right fraud. Fraud in the price, in the measurement, in getting the victim under some pretence to sign a bogus note; frauds which, we are sorry to say, are by no means confined to lightning-rod men, but very often practised by them. These fellows are masters of their art; their

KNOWLEDGE OF HUMAN NATURE

is so acute, their powers of illustration so great, and their glibness of tongue so remarkable, that one can not help wishing that their talents were exercised in some honest calling. With the majority of people, their only safety is in not listening to these chaps. If allowed to tell their story, they will convince most persons that they live in imminent danger; if the house has safely stood for 50 years without a lightning-rod, they can prove that the danger is all the greater; they can prove that a rod is needed then and there, and that the only rod that can possibly protect a house is the particular rod for which they are agents. If one's house is already rodded, however it may be with lightning, it is no protection from the lightning rodder. The chaps will show very plainly that a house with the style of lightning-rod it happens to have, is just a trifle more unsafe than if it had no rods at all, and of course safety is only to be secured by

TAKING DOWN THE OLD AND PUTTING UP THE NEW.

An allowance may be made for the old rod—which will straightway become a good one to be put up somewhere else! These chaps consider themselves in luck if on their first visit the man of the house is away, and they can operate upon the fears of the women. The various forms of swindling in measurement, etc., can as a general thing only be practised if the fellows are engaged to "rod the house," and our advice is to avoid these by having nothing to do with these travelling agents or their wares....But what shall those who fear danger from lightning do? it will be asked. We present some suggestions to meet the case in an article given elsewhere.... As the so-called medical batteries profess to deal with

LIGHTNING IN ANOTHER FORM,

we may say, as not foreign to the subject, that the battery business seems to be on the wane, only one new one having come before us since we last noticed them. Such a thing could not last long, it having no real value. Were the simplest laws of electricity generally known, these so-called batteries could deceive no one, as a glance at them would show them to be utterly worthless as generators of electricity.

THAT SECRET SERVICE SHOP

at Cincinnati seems to have found business dull and in order to get its name before the public instituted a murder—on paper. Indeed so quiet had it been for a few months, that we had nearly forgotten it, but the Texas papers and a letter from an indignant reader in Texas, brought them to mind again. The "Galveston Daily News" published with the neat and taking little title of "A Hellish Crime," a telegraphic dispatch from Dallas, giving the story that two women disguised as men had cut the throat of a farmer's wife and that the women aforesaid were shot dead by a stranger. The dispatch took pains to state that the information was derived from the special agent of the Cincinnati Secret Service Shop. Two days later the "News" announced that the story was "untrue in every allegation and particular." Our correspondents feels justly indignant that these "Cincinnati frauds," in order to secure notoriety, by making it appear that their detectives discovered this remarkable crime, should select Texas as the scene of the exploit, though he regards it as a shrewd advertising dodge. Knowing that the "Hellish Crime" will be widely copied, while its denial will not be, and as one who has the interests of the State at heart he sharply protests against the course of the Secret Servicables..... It has been before stated that the most annoying cases, we have to deal with are those in which we feel quite sure a scheme is a humbug, but have not the proofs to enable us to say so. As an illustration of this, and also as a sample of what is a frequent occurrence in our office, we give our experience with

"THE CHICHESTER RIFLE"

which was recently advertised very largely through the country. As there are a number of better class journals which consider the admission of an advertisement in the *American Agriculturist* as a proof of its being worthy of a place in their columns, extraordinary efforts are often put forth to get such advertisements into our columns. Perhaps on this account, the "Chichester Rifle Company" made an offer of a liberal cash contract for their advertisement in this paper, amounting to several hundreds of dollars (to run to $1,000 or more we believe). To get around our well known strict rules, the guarantee of $10,000 from a well known responsible party was offered us that the said Company would do by our readers "just what their advertisement promised." The gentlemen in charge of our business columns, as in duty bound, and according to custom, submitted the matter to the Editor. It seemed to be "all on the square," but to be certain, we sent for one of the "$4.50 rifles." On examination it proved to be a pretty good revolver, a 7-shooter, of $^{22}/_{100}$ calibre (ball about the size of small buckshot). But the barrel was extended to 16 inches, with good sights, and a wooden, removable shoulder piece was attached to the breech for holding it steady. Well, here was a small repeating rifle, that would not be very dear at $4.50 to any one wishing *such* a weapon for shooting at a target at short range, for killing rats, perhaps squirrels and other small game, at near distances. With such a "guarantee" should we not insert the advertisement? We first said yes, but on examining the large, page-wide advertisement, there was a lively and striking scene, well calculated to attract general attention. There was a combined prairie, mountain and forest panorama, with deer and other large animals scattered round, some alive and others shot down, and there were the hunters with their $4.50 rifles doing it, while in the foreground stood out in large figures "**$4.50.**"

The impression to be conveyed was that the $4.50 repeating rifles would be forwarded to hunt large animals, and shoot them at long distances, whereas a $^{22}/_{100}$ bullet would only seriously affect a deer when chancing to strike a very vital part, and then at not over 50 or 100 yards. It was argued to us that "the picture was only to attract attention, and that the text of the advertisement did not actually promise any such results." But it did not say anything to the contrary, and so we felt compelled to reject the advertisement, in the interest of our readers, however convenient the $1,000 proposed to us for a few insertions.—Afterwards it was again pressed upon us with the offer to strike out the prominent "$4.50" in the engraving, and to make any other change we desired. This seemed fair, but reserving a little time to decide, we despatched a private "detective" to the advertised headquarters of the Company, in a neighboring city, who was instructed to go as a country purchaser of the rifles. He found instead of a large Arms Manufactory, with extensive offices, etc., only two small 3d-story rooms and a few of the "rifles" in a case on a small counter. That of course ended further advertising negotiations, just as similar investigations often do. We were saved the mortification experienced by many respectable cotemporaries who adorned their pages with the big "Hunting Scene." They got their money; we suppose *their* readers got the wonderful $4.50 repeating rifles; though for some reasons, not *our* fault, complaints came to this office that money had been sent and no rifle received; or, instead, in some cases at least, a postal had been received stating: "Order placed on file, and will be shipped when reached, not later than—," having a date two weeks or more ahead.—Result: we don't know how many of these "rifles" went out, or "went off," but the Company has!—(We can hardly wonder that a business man in Walla-Walla, a twenty years' subscriber, who depends largely on buying in eastern cities, should, in renewing his subscription recently, write us thus: "I consider the *American Agriculturist* of great value to me on account of its care over its advertising columns; I prefer, as a rule, to pay a double price for any article. I want, if it has even the qualified endorsement of being advertised in your Journal.")

SUPPRESSING QUACK DOCTORS.

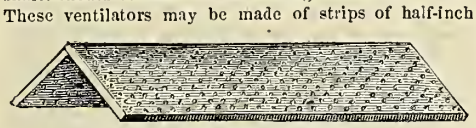
A large number of men, and some women, hang out their signs as "Doctors" or "Physicians," who are utterly incompetent to give medical advice. The mass of people have no means of distinguishing between these quacks and the really competent physician who has thoroughly prepared himself by studying, and by working under and with a regular practitioner. So, those needing or thinking they need medical advice, are just as likely to call upon one of these quacks as upon a trustworthy physician, or rather more so, as the former usually puts out the boldest, most attractive "sign." The regular physicians are limited by the rules of the profession from displaying any thing more than their full name and a single word indicating their calling.—The last Legislature of New York State made an admirable move towards suppressing this dangerous nuisance, in the passage of a law requiring every one offering to practice physic, medicine, or surgery, to be at least 21 years old, and to register before Oct. 1, 1880, in the County Clerk's Office, his name, residence, and *authority for practising*, and receive a license. Persons coming from out of the State, to obtain a license, must exhibit a diploma of graduation from a reputable medical college.—Any person practising without such license will be guilty of a misdemeanor, and subject to punishment by fine or imprisonment. Half the fines go the informer, and half to the county treasury. Now let not only the medical profession, but all good citizens, see to it that the provisions of the law are rigidly enforced, and let every State that has not done so, immediately enact similar laws, and one large source of swindling, of suffering, of death even, will be dried up. Let the good work be followed by other laws in regard to patent medicines. The necessity of such laws will be seen in an article on page 300.

Harness Sores on Horses.—There are few things which cause more delay and trouble in farm work during these hot months of summer, than the galls and sores that come upon the shoulders and backs of work horses. A vast amount of hard work must be done, and the animals are strong and well enough to do it, provided there were not these painful sores that prevent their applying themselves to the labor. A horse with shoulder or back galls, or both, suffers pain when it is put into the harness. The direct cause of these sores is the friction to which the parts are subjected, combined with the excessive heat and great flow of sweat. Inflammation and chafing of the skin are produced much more readily in hot than in cold weather, because the conditions of greater friction are then present. The preventive is in reducing the friction to the least possible amount. In the first place, the harness must fit closely and smoothly to the form of the horse, that the weight of the load may be uniformly distributed over the surface beneath the harness. Secondly, the horse should be in a healthy state, that the muscles and skin may be of their normal toughness, and the sweating not unnaturally profuse. This involves the proper care and feeding of the horse. A poorly kept animal, or one not in good health, will become sore more readily than one in good health. When the sores are already formed, a speedy cure is the thing needed. Sponge carefully the afflicted parts, to remove all accumulations from sweat. Then bathe with a lotion of Alum and Tannin, with a little Laudanum added. All pressure upon the sore should be removed by a proper adjustment of the harness, and, if necessary, keep the horse from work until cured.

Subsoiling.—The advocates of deep plowing are not either so numerous or so strong in their views as they were a number of years ago. It is safe to say that one of the best methods of loosening up the subsoil—and this is the chief end to be accomplished in using a subsoil plow—is by deep-running clover roots. With an occasional crop of clover that will send its roots below the depth to which the subsoil plow goes, the soil in most cases will be made deep and mellow, and at the same time enriched for the crop to follow.

America at the Great Fishery Exhibition.—The Fishery Exhibition recently closed in Berlin (Germany) was made a great success, largely through the American contributions—a fact most freely acknowledged by the German officials, and abundantly testified by the numerous awards made to America and Americans. The exhibition made by the U. S. Commission of Fish and Fisheries, of which Prof. S. F. Baird is the Commissioner, was at the same time the chief American contribution and the principal feature of the Fair. This was in the personal charge of Prof. G. Brown Goode, the competent assistant of the Commission, whose efficiency is testified to by all accounts of the exhibition and by a special award of a silver medal by the Crown Prince. America is honored, in the person of Prof. Baird, by the Emperor's prize, a gold and silver fish basin of elaborate design; and the various individual American exhibitors received prizes, so that in all no less than sixty honors of various kinds come to the United States. As this is the first International Exhibition in which this country has occupied the leading place, it is well to remember that it is due to competent management. Our former displays, however valuable individually, have been without arrangement and without a proper head. In this case, Prof. Baird officially and Prof. Goode personally so systematized the American display that America at once took the leading position that belonged to her.

Granaries.—In many cases it is the most economical to thresh the grain as it is drawn from the field. The straw being mowed away in the barn in the space that would otherwise be taken by the sheaves before threshing. But as the grain is the chief portion of the crop, a place to store it must be provided in the barn, or other farm building. When the grain is threshed directly from the field it is green, and goes through a "sweating" process which, as heat is generated, may injure it, unless the bin is properly ventilated. To turn the grain in the bin by hand is hard work, and to obviate this, ventilating shafts should be made for the thorough circulation of air. These ventilators may be made of strips of half-inch



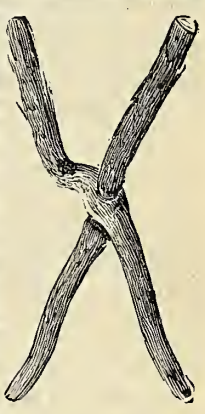
VENTILATOR FOR GRAIN BIN.

boards of convenient width, about four inches being usual, these are nailed together so as to form a triangular trough as shown in the engraving. The sides of the ventilator are bored full of small holes, and the ends coming through the sides of the bin are covered with a fine gauze. These ventilators are fitted into the bin, running from the front to the rear, with the open side downward. As the grain is poured in, a considerable vacant space is left below the ventilator, in which the moist and warm air can accumulate and then pass out the end of the ventilator. In this way, with two or three such ventilators in an average sized grain bin, even newly threshed buckwheat, the most "heating" of grains, may be stored without danger from overheating.

The Ox-Eye Daisy.—A Boston daily paper says: "The Ox-Eye Daisy has become a great pest in some sections of the country. Those who are troubled with this weed should bear in mind that it is propagated by seed and not by root, and that to rid themselves of it they have only to mow before the seed is ripe. It may take two or three seasons to rid a field of this innocent-looking flower."——This is an "innocent-looking" paragraph, but calculated to do mischief. The writer has somehow got hold of the idea that Ox-Eye Daisy is an annual, while it is really a perennial and *does* spread by the root very freely, and is also propagated by seeds. As with other perennial weeds, it should be cut while in flower to prevent it from ripening seeds. Mowing at this time will tend to weaken the root, but it is only through frequent and persistent cutting that it can be subdued.

News from Cloudland.—Not a spiritualistic revelation through a "mejium," but a very matter of fact communication from a scientific gentleman who is in the mountains of North Carolina on a tour of observation. Cloudland is on Roan Mountain and 6,367 feet above the sea level. On a day in the middle of July, with the thermometer in the nineties in the city, it is pleasant to read: "It is simply glorious. In ten days our extremes of heat have been 50° and 67°, air bracing, water crystal, views magnificent; for we can see land in seven different States. The show of *Rhododendron Catawbiense*, when the whole mountain was one great dome of flowers, was indescribably beautiful, while *Azalea calendulacea*, with its masses of flame, is worth coming here to see."

A Very Curious Growth.—Many articles are sent us which are simply curious or unusual, but which teach no especially instructive lesson. Of this kind is the specimen forwarded by W. J. Hester, McLean Co., Ill., which consists of two seedling Osage Orange plants, which are put together much as a blacksmith would arrange the parts of a pair of tongs. A root in its forward growth exercises a surprising amount of force, and we have seen various cases in which a soft and apparently yielding mass has moved a great weight for a very short distance. We have frequently seen cases in which roots having met with a potato, or with a beet or other root in their course, have pierced and gone through the obstacle,



instead of going around it, as they would have done had it been a stone. All that can be said of the present case, of which we figure the interesting portion, is, that the point of one root pierced the other root when that was young and soft, and in their after-growth the two roots accommodated themselves to the situation.

Refrigerators.—"L. B." In the June number of the *American Agriculturist*, 1875, a Home Made Refrigerator is illustrated and described. An ice-box of this kind which will answer all the purposes of a more costly refrigerator for a small family, can be made with very little outlay of time and money. An ice-box can be made from two dry-goods, or other boxes, the one smaller and put within the other, and the space between filled with sawdust—provide a double lid, and a hole at the bottom for the escape of the drip from the melting ice.

Hellebore, Wet and Dry.—"J. M.," of Tompkins Co., N. Y., writes: that our notice on "Mixing White Hellebore with Water has nearly cost me the loss of my bushes. It has done me no good at all. I always rely on your advertisements, but this time have been sold."—When one is unfortunate the desire to blame some one is quite natural. "J. M." does not say so, but he probably had used dry Hellebore successfully, he saw our direction for the easier and more economical method of using it in the wet way, tried it, and failed. The use of water seemed to be the cause of the failure, and as we advised water, we are, in the view of "J. M.," the direct cause of his trouble. We are not disposed to blame "J. M.," as he judged from what he saw or knew. There are two sides to all such cases: this is our side. When an application or process is advised in these columns, without qualification or comment, it is an indication that it has been found, either in our own experience, or in that of friends on whom we can rely, a proper or useful one. Whenever a thing seems probably useful, but has not been tested by ourselves or others, whose verdict we can adopt, we are always careful to state the source of our information, so that our readers can judge how far to accept it. Now take the present case. When White Hellebore was first used to kill the Currant Worm, it was always applied as a dry powder. So far as we are aware, our correspondent "Connecticut" was the first to apply it mixed with water. We tried it ourselves, and found it in every way so much better than the dry powder, that we have, each year, at the proper season, advised the use of water. As the advice which "J. M." says "nearly cost me the loss of my bushes," was based upon a yearly experience of over ten years, and the fact that the powder is also used in the wet state by the largest currant growers in the country, it is just possible that the failure of "J. M." may be due to other causes. It is not easy to see why the powder, if active when dry, should

he any less so when wet, and it is much more likely that it had become deteriorated hy long and improper keeping.

(*Basket Items continued on page* 325.)

Bee Notes for August.

BY L. C. ROOT.

As I anticipated, Basswood commenced blooming much earlier than usual. I first noticed bees at work on the flowers June 25th. At this date, July 5th, the bees are working very freely upon them. If the weather is favorable, we shall undoubtedly secure a good yield, as the tree is blooming more freely than usual. Those who have followed our directions, and have had boxes or surplus combs properly arranged, will be amply repaid.

Three of our best Italian colonies have been selected, from which we intend to extract, and I shall report the amount of honey we take from each during the season. They are in the large "New Quinby Hive," and are furnished with 32 frames of comb each, from which the honey is to be thrown with the Honey Extractor. June 25th, we took from No 1, 29 lbs.; No. 2, 32 lbs.; No. 3, 34 lbs.; July 5th, No. 1, 26½ lbs.; No. 2, 31 lbs.; No. 3, 35¼ lbs. I propose to continue an accurate report of the products of these three hives, to show the readers of "Notes" that it pays to give bees care, and at the same time to illustrate the advantage of thoroughly comprehending whatever we undertake.

During the present month, take care not to add too many boxes, or to extract too freely, in localities where fall forage is scarce. I would advise every bee-keeper to leave a few hives without extracting all of the combs. In fact, where boxing is practical, it is well to arrange a few hives with extra combs to be filled and capped over. I have frequently known seasons in which the brood combs were so entirely filled with brood that all the honey was stored in boxes. Then the yield of honey closing abruptly, but little or no honey was stored for winter. At such times, it is most desirable to have heavy cards of sealed honey that may he furnished to such stocks. In a word, we should not be so eager to secure a great surplus as to run the risk of starving our bees, which is sure to be the result of improper management.

The following inquiry suggests thought enough for several articles for the beginner: "What is the cause of bees buzzing about their hives on pleasant days, as if they were going to swarm? Mine have been doing this since May 1st, and have not swarmed yet. About the middle of the day a number of them rush out of the hives and fly in circles with their heads towards the entrance, and finally enter without going off any great distance." ....*Answer.*—The occurrences similar to those spoken of by our correspondent will be noticed in every good stock of bees during the period mentioned. During each fair day the young bees leave the hive for their first flight. Our correspondent has described their appearance and actions at such times very accurately, but has made a mistake in supposing such to be any indication of swarming, only so far as frequent flights of this kind show that the stock is increasing in strength. The inexperienced are often led to suppose that bees are robbing at such times of busy flight. Our friend is evidently troubled because his bees do not swarm. Many bee-keepers watch the clusters of bees lying idle on the outside of their hives, and wonder that they get no swarms. To such, we would say, read up upon this subject, and see if there is not a much better way than to wait for swarms. If increase in numbers is desirable, practice has proved that it is much better to rear our queens in advance, use artificial comb-foundation, make a half dozen better and far more desirable swarms early in the season, and not wait for from one to three natural swarms, if so fortunate as to get any at all. In bee-keeping, as in all other pursuits, it pays well to investigate and keep informed as to the best methods of the day.

The "Rose Bug."

The present year is remarkable for the abundance of insects, and not the least among them, is the "Rose Bug," or more accurately, the Rose Beetle (*Macrodactylus subspinosus*), has been sent to us by several who found it destructive to a variety of plants. The insect in question is not a large one, the body being about one-third of an inch in length, and covered with an ashy down. The slender legs are of a pale red color, and the joints unusually long. Though called the Rose Beetle, it is fond of many other plants, especially those of the rose family, as the apple, plum, and cherry—in some cases, the foliage of the latter has been badly injured, and they have caused much annoyance to those who have had cherries to pick. It is by no means confined to plants of the Rose Family, as it is often one of the grape-grower's worst enemies. It is very fond of the flowers of the grape, and often destroys great quantities of clusters. The female enters the ground to deposit her eggs, which are hatched in about three weeks; the young grubs feeding upon the tender roots of plants. In late autumn, the grubs burrow deep to avoid frost, and spend the winter in an inactive state. As spring opens, they come up near the surface, change into the pupa state, from which they come out as the perfect beetle in the month of June. The beetle is active for about a month, when new eggs are laid, and the same cycle is repeated. The only time that a remedy can be applied, is during the mature state, when the beetle is above ground, and this consists in collecting and killing them by hand. In early morning, while they are sluggish, they may be brushed into a pan, in large numbers. In removing them from trees, a large sheet should be spread to catch them, as they are jarred from the tree. No poison has been used with success.

A Talk about Medicines which it will be Well for All to Read and Think About.

QUACK MEDICINES — PROPRIETARY MEDICINES — "SPECIFICS"—MEDICAL ADVERTISEMENTS.

The statisticians say that at least **50,000** Deaths are caused every year by intemperance in the use of spirituous liquors, to say nothing of the incident poverty and suffering of the victims themselves—of their wives, children, friends, and the community at large, and of the crimes resulting; or of the absolute annual waste of many hundred millions of hard-earned Dollars. None of this will we controvert; but we may surprise some readers by asserting the belief—*First*, that if alcoholic beverages slay 50,000 annually, the so-called patent, proprietary and specific medicines shorten the lives of quite as many people, cause an immense amount of ill health, and involve the worse than waste of hundreds of millions of dollars every year; and *Second*, that a great deal of the intemperance in drinking is brought about by medical quackery.—The reasons for the above statements will appear further on.

"SPECIFIC MEDICINES."

There is a wide spread, almost universal, popular belief that medicines are "specific," that is, that there is or may be found a particular medicine or medicines which will *cure* particular diseases; that one medicine, for example, will cure catarrh; that another will cure liver complaint; that another will cure consumption, and so on. The patent medicine makers act upon this popular error. They catalogue a larger or smaller list of diseases, give a great variety of *symptoms*—a list so comprehensive that almost any person, especially one with his nervous system, his stomach or his imagination slightly out of order, will find something that exactly hits his or her case, and then comes the positive announcement that such or such a medicine is a sure specific cure.

In the great medical libel suit against the *American Agriculturist*, terminating in its triumphant vindication Feb. 21, 1872, after running in the Courts for four years, several of the highest and best medical authorities were questioned in Court as to the number of medicines there were in the whole range of the *materia medica*, which could be called "specifics." None of these authorities were willing to name a positive specific, with a single exception: Dr. M. R. Vedder testified that he believed "sulphur, properly applied, would always cure the Itch, and may therefore be called a specific." Even to this it might be objected that the "itch" can hardly be called a disease, as it is the result of the biting of minute vermin, not unlike human lice, lice upon poultry and other animals and upon plants, the scab on sheep, etc. In the itch the vermin are too small to be seen with the eye unaided by the microscope. The cure depends upon poisoning or smothering the animals, which is effectually done by the application of lard mixed with sulphur, or with mercurial salts, etc.—the sulphur being preferable despite its disagreeableness, because it has no injurious or poisonous effect upon the individual.—Some of the Physicians stated that quinine was nearly a specific for malaria, yet with the reserve that some persons were injuriously affected otherwise by quinine, that it sometimes failed in particular cases, and that ordinary persons not skilled in medical science and diagnosis, *could not be certain that their sickness was caused by malaria;* and further, that the most skillful medical men could not always decide this point unqualifiedly. And just here is one great objection to *all* kinds and classes of medical nostrums, patent medicines, proprietary medicines, or good medicines sold to the general public and taken without the direction of skillful, educated, experienced medical observers. It is literally true that "what is one man's meat is another's poison"—that what will aid in the cure of a particular disease in one person will be injurious to another person affected by the same disease, but in different circumstances as to constitution, physical condition, etc.

EVEN PHYSICIANS SEEK ADVICE.

It is well known that the most skillful physicians when seriously sick themselves, or when any one in their families is very sick, never prescribes for himself or those dear to him, but calls in another physician, even if he has to summon one whom he knows to be quite inferior to himself in medical knowledge. His experience has taught him that any person with a system sufficiently disordered to need the aid of medicine, is *not in a condition* of mind and judgment to decide as to the kind of malady, or the proper remedies in his particular case. And yet many millions of people with no proper understanding of the human system, are constantly dosing themselves with the advertised and he-puffed medical nostrums that load down the shelves of all sorts of establishments and sales shops, and now, indeed, of nine out of ten of the regular drug stores of the whole land—and the advertisements of which fill the columns and furnish the support of the great mass of newspapers throughout this country and some others.

CURING BY IMAGINATION.

It has been said that "the best physicians give medicines in many cases to amuse the patient while nature is working out the cure." That such is sometimes the case we have no doubt; indeed, we know an excellent physician who was for twenty years called from once a month to once a week to see a lady in good circumstances and of more than ordinary intelligence, though at the same time of a nervous temperament. The lady always asked for a "prescription," but the physician preferred, in her case, to prepare the medicine himself, which he sent to her in the form of small pills. These pills were merely cracker crumbs made up with gum arabic and rolled in powdered rhubarb or whatever would give them the odor of "the shop." As simple and inert as they were, the pills invariably cured.——The one redeeming feature in this whole patent medicine business is the fact that *some*—would that we could say *all*—of the so-called remedies are actually as inert as the above mentioned pills—producing no other effect than to amuse those who are actually ill, while nature is curing them, and have a soothing influence on those whose disorders are of the imagination only.

MEDICINES PRODUCING INTEMPERANCE.

But there is a darker side to the picture; many, indeed most, of the medicines are not thus harmless. Most of the liquid medicines consist largely of whiskey or other cheap form of alcohol, qualified with some stuff to give a medicinal taste. Even the so-called "Temperance Bitters," and others claimed to be non-alcoholic, are open to this charge. We once collected twelve varieties of these compounds, all said to be practically non-alcoholic, and on subjecting them to simple distillation, no one of them failed to yield less than nine per cent of pure alcohol, and one labelled "Temperance," gave 28½ per cent of alcohol: common whiskey contains only 40 to 60 per cent of pure alcohol. If one takes a dose of a medicine of this kind, the alcohol acts as a temporary stimulant, and if the stuff contain Gentian or a similar drug that has a transient tonic effect, the patient "feels better" at once, even though he may not be, and usually is not, really ill. He at once is convinced; "That's the medicine," is his implicit belief, and he not only continues to take it, but commends it to friends and neighbors, who go through a similar experience of "feeling better," and the medicine has a "run"; certificates as to its excellence are given, and the stuff has a large sale.

But what is the result? Those who take it once, repeat the dose on every occasion of real or imaginary change of feelings from the slightest cause. Over-work, over-eating of poorly digestible food, loss of sleep, business troubles, or whatever causes one to feel "out of sorts," induces a resort to the "Bitters"—or whatever the stuff may be called. What should be, and what would be good health, but for the dosing, is destroyed. In fact, the person is, unconsciously no doubt, actually indulging in a moderate "spree." Indeed, a taste for alcoholic stimulants is thus formed, which *often* in the end leads to intemperance. When through this dosing the system becomes habituated to its use, and enlarged doses cease to have their former effect, the patient looks over the long medical advertisements, and finds some "symptoms" there described which seem to hit his or her present case, and a new medicine is tried. This new stuff may be either more strongly alcoholic or more positively tonic than the other, and for a while appears to be the needed remedy; but the system soon becomes habituated to this, and possibly another and another of these nostrums is tried, until the end is confirmed illness, and thus the grave is often reached long before it need have been. The same general effects follow

PROMISCUOUS DOSING

with any other form of medicine. The popular pills, for example, are of two kinds. They may be nearly or quite inert, and serve to amuse the one who takes them while nature and rest work a cure, or they are the simplest possible cathartic, and act upon the fact that in the beginning of many forms of illness a smart movement of the bowels is just the one thing needed. The harm done by these is, that special virtues are ascribed to, and a high

price is paid for, a nostrum which accomplishes no more than would a dose of some simple remedy like Calcined Magnesia or Powdered Rhubarb. One feels better after a dose of this or that pill, and advises his friends to use them; the maker sells for 25c. what costs him but a cent or two, and fortunes are made from a pill of which, were there a general knowledge of the simplest laws of health, not one could be sold.

These illustrations apply to about all varieties of "patent" medicines, so-called—though they are not patented at all, but are really secret remedies. We have looked into this subject, and our observations during these many years have fully satisfied us that these "patent" or quack medicines have, in our country at least, killed more persons and caused more suffering and more want than all the wars since the Declaration of Independence, and that in the annual destruction of life and health, the use of these medicines and the intemperate use of alcoholic drinks are twin agents of the King of Terrors. A physician lately said to us: "If the sale of medicines were entirely stopped, except when prescribed by a regularly qualified physician, it would compel half the doctors in the country to go into some other pursuit or starve, for the use of quack medicines supplies more than half the business to the medical profession."—And the remark is undoubtedly true.

QUACK MEDICINE PROFITS.

Immense fortunes have been, and are still being made by a few from the manufacture and sale of these secret compounds. There are many miserable failures also, but these are seldom heard of. One great element in the success of these things is cheapness; the first cost of the article must be very low. The most important point is to hit upon a taking name, and one that will convey the idea of applicability to a wide range of diseases—there is "much in a name," in this case. There must then be an account of the origin of the stuff—its discovery, and this should be such as to throw about it an air of mystery, or the glamour of romance or fable. The cost of the stuff being low, the retail price should be correspondingly high—a price of $1, $1.50 to $3 for a bottle or box that costs 5, 10 or 15 cents, allows, after giving the retail agents a liberal discount of one-third to one-half, something to pay for wholesale advertising and still have a "living profit" left for the maker. It requires some capital to launch such a thing, and get it started. There must be a general outbreak of advertising, a giving away of a few dozens on trial, and if the stuff only has whiskey enough in it to make people "feel better," certificates to its excellence can be obtained at once, though those from patients who have been cured as well as from M. D.'s who testify to its efficacy are easily *made up* at the start. The advertising of these things is an art of itself. There are papers, we are sorry to say, that will sell whole columns—yes, whole broad pages, to the stirring announcement, and if these give a sufficient variety of symptoms and a strong list of wonderful cures, the thing *may* go. It will be wonderfully helped if almanacs advertising the stuff can be scattered by thousands, and circulars of convenient size to use as wrapping paper are furnished dealers in small wares free of cost.

PLENTY OF VICTIMS.

All experience shows that among some 40 or more millions of people there will be found, if the work is done effectively, some hundreds of thousands, if not millions, of nervous imaginative persons with supposed or real disorders who are always ready to *try* any new thing that claims to afford them relief, and it is these tryers who afford a large supply of regular customers—for a while at least—for every new medicine that is offered.

Such in brief is the real history of each one of the so-called "patent" medicines, that are now before the public, or have passed into the limbo of things forgotten. Let any one notice at the freight depots and see the hundreds of tons of these health-destroying, death-dealing "medicines," and then look at the columns of the majority of the ordinary newspapers and see how largely these sheets are sustained by the advertisements of a trade that keeps hundreds of printing presses and even paper mills at work, and he will have some idea of the magnitude of this traffic, and will not wonder that in some cases large fortunes result from it—fortunes to a few—but what of the many who support it at a fearful cost of money and health, and life?

We would not imply that all medicines that are put up and offered for sale are objectionable, for some, like a well known extract of ginger and a few others are not secret preparations; their composition is known and their effects well understood. But the great mass of the secret medicines offered to the public are health and life destroying, and those who assist in their distribution in any manner are, to say the least, in bad business. No journal assuming to be a director of public opinion, or a conservator of the public good, should be so ignorant as to have any part in this nefarious business.

We need hardly warn the reader to let every thing of the kind alone, and to not tamper with his health and vigor by taking *anything*, of which he does not know the composition. In most slight ailments attend to the diet and nature will do the rest. If really ill enough to need medicine, do not be wiser in your own conceit than the skilled physician, who goes to another in sound health for advice, but like him remember that a disordered body affects also the mind, and when advice is really needed, seek it from a proper source. It will be an immense saving in money and in health—in life.

NEVER READ MEDICAL ADVERTISEMENTS

of any kind, in newspaper, almanac, or circular. They will only work upon your fears, by their skillfully array of symptoms and cures. Your imagination will most likely find some "*symptom*" which it will do no good to learn about. It is told of a certain nervous medical student that in going through his text-books he actually believed himself affected with nearly every disease of which he read a minute description.—A number of medical gentlemen once arranged themselves to meet at different points on the road a gentleman who was to come home from a village a dozen miles away. Each inquired after his health, and spoke of how ill he appeared. The man came to believe himself really sick, and on reaching home, went to bed, and had quite a course of fever.

FINALLY,

the readers of the *American Agriculturist* have not for a quarter of a century been troubled with any of these distressing medical advertisements in its columns. It has cost an effort, at times, to reject some of the better class of these—if there can be any better class among things absolutely bad—especially as by this course we cut off a large source of profitable income. Those who make a thousand per cent upon their stuff, can afford to and do pay large sums to reach the people with their array of "symptoms." But we believe our readers prefer paying more for "clean pages." When they are unwilling to do this we want to go out of the business of publishing. Neither our pages nor our backs can furnish bulletin-boards for announcing what we believe to be only a public detriment, or worse.

Editorial Correspondence. — Items from "Notes by the Way."

[Mr. Orange Judd has resumed his customary summer tours of observation among farmers. These extended last year as far west as the Rocky Mountains, including Nebraska and Colorado on the south, Minnesota, Wisconsin, etc., on the north. A portion of last season's notes unaccountably disappeared from his travelling bag—those from Colorado, part of Nebraska, Mich., etc.]

Where Travellers Should Go.

Every year many thousands go on pleasure trips across the Atlantic, without having first seen our immense western country, our own majestic mountains, our grand rivers, such as the Mississippi, Missouri, Ohio, etc.—many not having even seen Niagara. It is not well to do thus. There are no rivers in Europe to be compared in size with our own. The Rhine has a little strip of 60 or 70 miles between Bingen and Coblentz, of much interest on account of the tumble-down old castles, and the legends connected with them, but nothing to be compared in scenery with the Upper Mississippi between Minneapolis and La Crosse, and even down to Clinton, while from Cairo down a thousand miles, it is simply grand from its width and great bends. A ride of 1,000 miles from New England or New York to Chicago; then of 500 miles from Chicago to Omaha, and another of 500 miles on to Cheyenne, over the broad plateau, greatly expands one's ideas and enlarges his conceptions of the vastness of our country. No journey in Europe approaches it, unless it be a trip from Berlin in Prussia to St. Petersburg in Russia, thence 700 miles from St. Petersburg southeast via Moscow to Nijni Novogorod on the Volga. A journey of 750 to 1,000 miles northwest from Chicago, across Wisconsin, Minnesota, and out into Dakota, is of almost equal interest—with its pleasure greatly heightened by a return via Duluth and down through the great lakes to Buffalo or Montreal.—A trip of 300 miles south from Cheyenne, down through Colorado's Plains, to Colorado Springs, and the adjacent Pike's Peak, with side journeys into the Rocky Mountain mining regions, has, or ought to have, more of interest to every American than a run over Switzerland—at least the former should *first* be taken, and the trip is far less expensive, and has far less annoyances. A line addressed to the Union Pacific R. R. Company, at Omaha, Neb., will bring descriptions of the route and particulars as to cheap excursion tickets. A similar line addressed to the Chicago & Northwestern Railroad Office in Chicago, will bring like information about excursions to the northwest.

A Noteworthy School.

The Seminary at Lima, 18 miles southeasterly from Rochester, N. Y., has done a grand work during the past Fifty Years. Of the Twenty Thousand or more Students, mostly over 14 years of age, who have enjoyed its educational advantages, a very large proportion have come from the farm homes of Western New York, though not a few have come from more distant localities, Canada supplying a liberal share. Many of these students, of both sexes, are now occupying high positions of honor and usefulness all over our own country, and some abroad; but the larger number of them have returned to the farm, and are now the intelligent Cultivators and House-keepers so numerous in the "Genesee Country." At the great "Semi-Centennial" Gathering, June 6–10, we met perhaps a hundred or more of those with whom we studied 37 to 40 years ago—almost all of them with fast silvering locks, but with the intelligent countenance that shadows forth an educated mind. How the hopes, the ambitions, the struggles of early manhood, come back afresh when one meets and recognizes so many earlier companions after the long separation. Who could fail to "renew his youth" on such an occasion? While many of our readers would enjoy an account of the Semi-Centennial exercises, we must not take space for this that belongs equally to hundreds of thousands of others not personally interested. We will, however, speak of

One Feature of the Seminary at Lima,

which specially characterized it during its earlier years, and is still kept up somewhat at least. We refer to the facilities for superior educational advantages at *low cost*, both for tuition, board and incidentals. While the Institution furnishes advantages equal to nine-tenths of the so-called Colleges, for everything from common English to the higher studies, the tuition charges are but nominal, and in our day at least, it detracted not one whit from a student's standing, or from the esteem of his teachers and of most of his fellows, that he wore home-spun, that he boarded himself on 25 cents, 50 cents, or a dollar a week, *and earned it* as he went along, in the garden, in the haying and harvest fields, in mechanical work, in peddling, in canvassing for books and periodicals, in repairing clocks during vacation, etc., etc. We know a good many who came to Lima from small farm homes 35 to 40 years ago, with only a few dollars in their pockets, and boarded themselves in small attic rooms rented for 25 to 50 cents a week, who literally earned their way, who stood high as close students, and who are now occupying most important and influential positions—some of them owners of grand, well-cultivated farms, some presidents of colleges, some judges and governors, some distinguished ministers, some editors of leading journals, etc., etc. The early habits of *economy*, of *self-reliance*, of *push*, acquired in such circumstances, are of invaluable benefit, in all after life, whatever one's occupation, calling, or position. Multitudes of farmers' sons and daughters from 3 to 30 miles or more around, hired their little rooms, furnished them from home, and received their provisions from the home stores once or twice a week. Probably during 50 years past five to eight thousand or more farmers' sons and daughters have received more or less of superior education that they would not and could not have obtained but for such economical facilities as were supplied, and the system of living, in one sense, fashionable at Lima. The high and graded public schools, now so common, have been in existence but a few years.

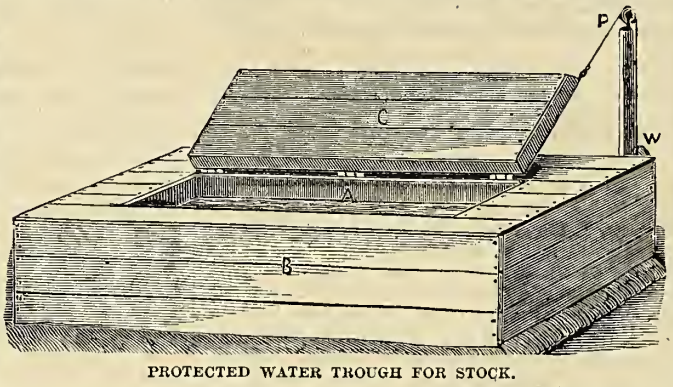
Windmills Good on Eastern Farms.

The windmill is found so useful throughout the prairie regions that one can hardly drop down at any spot between Indiana and the western limits of settlement, without seeing one to a dozen farm windmills within range of the vision. Until quite

recently they have not been considered specially adapted to eastern farms, except when there chanced to be an unusual wind exposure.—In our present journey up through New York State, we find a considerable number in operation, and learn that many more are ordered, or to be ordered, for this season. We write this 1½ mile east of Lima, Livingston Co., sitting under the covered frame of a "Stover" Windmill on the farm of Samuel Bonner. This mill has been in use over a year, and, with the exception of a single day, has, summer and winter, supplied some 40 head of cattle and horses, and 50 or more sheep, with fresh water from a deep well, and not a tithe of its power has been required. No care has been needed except to stop it when not wanted, and no expense except a little oil for its gearing, while it promises to be good for a dozen or twenty years. It is on a level farm, stands on a frame 40 ft. high; wheel 10 feet diameter. It is entirely self-regulating, the wings turning edgewise to the wind when it blows too strong, and any desired rapidity of motion can be secured, whether the wind be high or only a light breeze. The cost was $100 for the mill and gearing, and the agent supplied and put up the frame, all complete, for $25 more. Mr. Bonner afterwards boarded up the lower part of the frame, making a comfortable room for tools, etc., at small additional expense. The pump is a double-geared force-pump, so arranged that the whole or part of the water can be driven out of the top spout to the water-trough, or a part or the whole be driven into a side-pipe below the surface, which carries it to any desired distance. Some send all the water thus to a milk-room, where it surrounds milk cans, and flows from thence back to the stock yards. Others have a branch pipe into the dwelling for the house supply of water. The windmill will force it to any desired hight, as to a tank in the house chambers or bath-room. This pump, with tubing, costs about $25. Cost of the whole $150.—Allow ten per cent per annum for interest and wear, and the annual cost is only $15, which is saved several times over in the labor of pumping water for the stock alone. There is a supplemental hand-lever that can be readily used for hand-pumping if needed, but there has been only a single occasion to use this in a year, in a dry time when there had been no wind stirring for several days.—[On the farm of A. W. Comstock, two miles west of Lockport, N. Y., we saw an arrangement like the above, except that the shaft from the windmill was attached to the top of the rod of a common wooden pump, reducing the total cost to $125, as the pump was already in the well. The windmill frame is 34 feet high. It supplies abundant water for 50 cattle and horses, and for dairy purposes. Mr. Comstock keeps some 40 cows, and by special care and skill secures a cheese that sells to regular customers at considerable above the market rate. He uses no ice, but cools the milk in cans in a large box near the windmill which keeps a supply of cool water around the cans.]

Protected Water-Trough for Stock.

Near the windmill, on Mr. Bonner's farm, we saw a convenient watering trough or tank, which may be useful in most cold regions. A supply of water, not usually ice cold even in winter, is desirable for all domestic animals. The tanks may be of any desired size. Mr. Bonner's consists of an inner water-holding, plank box, *A*, 11 feet long, 4 feet wide, 22 inches deep, holding about 18 barrels, and open at the top. On the four sides a box, *B*, is built of inch boards, 12½ feet long, 5½ feet wide, and 30 inches high, which leaves a space of 8 inches all round for filling with sawdust. A double cover is made of boards 8 inches apart, with an opening at the side next the stock yards, 7, 8, or 9 feet long, and some 2 feet wide. The sides of this are boarded up, the opening being a little smaller at the bottom. All the enclosed space is filled with saw-dust, the same as the sides. A double cover, *C*, to fit the opening is made and also filled with saw-dust. This cover has heavy strap hinges at the back, and is nearly balanced by a stone, or other weight, *W*, attached to a cord, *P*, running over a post to the rear of the tank, so that a child can lift or close the tank cover. At Mr. Bonner's the cord runs to the enclosed room around the base of the windmill frame, and an iron weight is attached there, so that the tank cover can be opened and closed from this room. The front of the tank is sufficiently banked up for sheep to reach the water. An inlet pipe comes from the pump, and an overflow pipe from near the top of the water box carries off surplus water. The whole arrangement is easily and cheaply constructed. The water from the well is not very cold, and being frequently changed by fresh supplies, seldom freezes. During last winter ice was seen in the tank but once, and then only a thin film, which dissolved in fresh water.



PROTECTED WATER TROUGH FOR STOCK.

Value of One Improved Animal.

In Mr. Bonner's barn we noticed a good Shorthorn Bull, two years old last spring, thorough-bred, registered, that cost $150 we believe. He was kept for the double purpose of improving the stock of the farm and of the neighborhood as well, and for the latter purpose was let at the low rate of $2 per service. His progeny for the present year will number at least 60, yielding say $120, though a considerable number of these will be in the home herd. A little figuring will show the value of a single such animal. The calves will be worth $8 to $10 each at one day old, while the ordinary "natives" sell for only $1 each when dropped—an increase of $7 to $9 each. Call the increased value only $5 each, a very low estimate, and the increased value of the 60 calves will be $300, or twice the cost of the bull. But look ahead a little: The expense of raising 60 animals to three years old will be about the same for natives or good grades; but at that age the improved animals will sell for at least $25 more per head—equivalent for the 60 animals of this one year's get, to at least $1,500. Let it be kept in mind that this result will surely come from keeping this one $150-animal a single season, while his value a year hence will be quite as large as now. And this result may be depended upon annually for half a dozen years. There is no doubt that the above figures will be fully realized. Query: Why are not more such breeding animals introduced into every neighborhood where farm stock is kept?—Similar figures apply to horses, swine, sheep, etc.—A multitude—indeed the great mass—of farmers do not hesitate to graft their native apple trees with improved cions, yet they are satisfied to keep on raising, caring for, and using "scrub" animals, when every dollar expended in improved blood is speedily returned many fold!

The "Genesee Wheat Country."

Forty to forty-five years ago, when we were personally familiar with the farming in this region, Winter Wheat was the chief money crop. The counties of Genesee, Livingston, Ontario, Wayne, Monroe, Orleans, Niagara, Cayuga, Onondaga, Seneca, Cortland, and at least a part of Erie, Wyoming, and Yates, embraced what was once known as the "Genesee Wheat Country"—a district producing such excellent grain for flouring, and in so large amounts, that it was known the world over as *the* wheat field of America. About 40 years ago, we believe it was, the insects began their extensive ravages. But after they became less troublesome, wheat remained in disfavor; farmers said the soil was "wheat sick," and for a long time wheat was almost a secondary crop. Ohio, Indiana, part of Michigan, Wisconsin, Minnesota, and the far Northwest, successively lead in the reputation for winter wheat, while Illinois, Iowa, Kansas, and Nebraska, one after the other, came forward with the immense supplies of excellent spring wheat. But judging from what we have seen during a few years past, and especially during the present journey, the "Genesee Country" is fast regaining its former position as a great wheat producer, and Ohio promises this year again to come to the front. During a few days past we have seen in Livingston, Genesee, Niagara, Monroe, and Orleans counties a great number of fields of standing wheat—in close succession all along the routes we travelled—that fairly eclipse anything we remember in the olden times—fields whose thickly standing, uniformly distributed, strong stalks are crowned with heads that indicate 25, 30, 35, and often 40 bushels per acre.

Whence this Improvement?

We talked with many farmers, and the answer seems to be: (1st.) Rest of the soil, that is, time given for sun, air, moisture, and frost, to release fertilizing elements previously locked in undecomposed rocky, or stony fragments.—(2nd.) Improved varieties of wheat, among which the "Clawson" seems to be the leading and favorite variety.—(3rd.) Better mechanical working of the soil by improved implements.—(4th.) A judicious rotation of crops.—(5th.) Much freer use of fertilizers, especially, (6th.) The use of superphosphate. Of the last named, we have seen remarkable instances. For example, we have gone through wheat fields that promise 25 to 35 bushels per acre generally, while strips through the same fields will hardly yield 10 bushels per acre. The soil and treatment were the same every way, except that the poor strips did not receive the 200 to 300 lbs. of superphosphate per acre, which was applied to the rest of the land. These are exceptional cases, but other fields point in the same direction.

A Crop Rotation.

The system of rotation of crops in the wheat-growing section of Livingston County, N. Y., and we believe it is substantially the same through the "Genesee Country," is about as follows:

Year.

I.—Wheat with some Timothy seed sown in October, and liberal Clover seeding in spring.

II.—Pastured somewhat in autumn.

III.—Clover mown, with second crop ("rowen") cut for seed.—Variation, pasturing instead of mowing, if needed for that purpose.

IV.—Early clover growth turned under and corn planted, the chief yard manure of the rotation being applied to the corn.—Variation: If the clover is doing well and hay or pasturage is specially wanted, the clover is allowed to stand over another year.

V.—Barley (or oats) in spring on the corn stubble, with wheat in autumn, with phosphates. Some apply part of the yard manure of the course, as a top-dressing to the wheat in autumn, while others plow it under in preparing the wheat land, especially if the manure is not well rotted.

Manuring with Brains.

In our travels we visited the farm of one of the old readers of the *American Agriculturist*, who exemplifies our Timothy Bunker, Esq.'s brain-manure theory. (We shall not give name or location, for our subscriber is entitled to continue his practice until his neighbors become wise enough by reading this or some other journal, to utilize their home supplies). Every spring our subscriber sends out a man with a large box-wagon into all the region round about, to clean up their hen-roosts for them. He finds them quite ready to let him gather all the droppings he can scrape up and take away, at 15 cents per bushel. He generally collects 30 to 40 bushels a day, according to "the

finds" he chances upon, as the gold miners would say—though he understands the region so well that he knows where the best "lodes" are to be found. This manure is brought to the covered manure deposit, where it is mixed with dry earth, and some plaster and salt, to about double its bulk. Applied at the rate of say 10 bushels of the mixture per acre, to corn, and indeed to all other crops, it produces grand results, at less than one-fourth the cost of Guano or the best Superphosphate, and even at far less cost than the best and cheapest barnyard manure. Brains do pay in farming!

Farms of Charles Keep.

A variety of items were noted during a visit to the farms of Charles Keep, about two miles east of Lockport, Niagara Co., N. Y. Mr. Keep has been in business many years, and recently turned his attention largely to agriculture. He has some 500 acres in adjoining farms, which are "worked on shares" by two or three experienced men, but the owner, we judge, takes a lively interest in the direction and management, as he seemed to thoroughly understand every item, and but from his own account, we should have supposed he is himself *the* farmer. First we noticed the windmill, which has been doing effective service for three years, and very satisfactorily too, in supplying all the water for a large amount of live stock, and other purposes. The wings somewhat resemble an old-fashioned bonnet, with the lower or back half of the crown cut off. It is named the "Nysewender's Turbine Windmill," made in Ohio, by Mast, Foos & Co., all the parts being of iron. The cost, the self-regulating, etc., are similar to other good forms of windmills. Mr. Keep prefers the iron wings, because less liable to the action of the sun and moisture. [There are at least seven or eight good self-regulating windmills, any one of which will do excellent service, such as the "Halladay Mill," made by the U. S. Wind Engine and Pump Co., Batavia, Ill.]

Cement-floored Horse-stalls.

The floor of the horse-stables, stalls, and carriage room, is made of a thick layer of small stones, gravel, and sand (at the top), all bound into a solid stone-like bed, with hydraulic lime. Under the stalls it inclines sufficiently to carry the urine to a broad but shallow gutter, and this falls enough to take the urine and washing-water off at one side. The vehicles stand upon the same kind of flooring, a little higher than the stalls. Under the horses, for them to stand upon, 2-inch-thick plank are laid half an inch apart; the openings serve as gutters to carry the urine over the cement below to the rear gutter. As this cement extends to the walls all around, there are no hiding places for rats.

Fattening Lambs for Spring Mutton.

In December of 1879, Mr. Keep, with his lessees, bought some 900 lambs from the farmers in the country around, at an average cost of about $2.50 each. About 400 of these were kept in the high basement of a large barn, surrounded with heavy stone walls, with windows to admit moderate light and for ventilation as needed. This basement was all in one room in the form of an L, the two longer sides being 130 feet each, one arm 30 feet wide, and the other 40 feet wide, furnishing 7,900 square feet of floor room. There are six ventilators from each sheep-room, 15 to 18 inches square, running up through the barn, to carry off foul air, surplus heat, etc. The flooring is of cement, the same as the horse stables, with suitable depressions for carrying off water if needed. About 500 of the lambs, with some sheep, were kept in the basement of another barn on an adjacent farm,—a single room 160 feet long and 56 feet wide, giving about 9,000 square feet of flooring—cemented like the other. The lambs were separated into lots of 15 to 25 in pens, formed by movable feeding racks (described and illustrated below.) Water troughs, supplied through pipes from the windmill pump, were placed at convenient points.

Portable Sheep-Racks and Pens Combined.

Those in Mr. Keep's Sheep-room (the barn basement room) are constructed thus: Corner posts, *a*, *a*, of 3½x2 inch strips, 3½ feet high. A 6-inch board, *b*, *b*, all around the top. About 20 inches from the ground a 6-inch board, *c*, is nailed on in front and at

Fig. 1.—PORTABLE SHEEP-RACK COMPLETE.

the ends, and an 8-inch board, *d*, along the back. A board 6 inches wide, *e*, is fastened underneath along the front. Back of this a 16-inch wide board, *f*, stands inclined against the back. This slides the corn or roots down into the trough formed by the front and end boards, the narrow bottom piece, and the inclined board.—In front, perpendicular strips, *s*,*s*, about 4 inches wide, are nailed on, leaving the openings between them about 7 inches wide—but further apart if for large and full-grown sheep.—These racks are about 18 inches from front to rear and generally 16 feet long, but vary in length to suit the divisions required. In use they are arranged to form sheep-pens oblong or square—the walls of the room forming one side of the outside rows of pens. The general form is a 16-foot rack set parallel with the walls, and two others 12 to 15 feet long forming the other two sides, or one of them shorter to leave a passage to a water trough. The backs of the racks of two sets of pens are set 3 to 4 feet apart, leaving a passage way for carrying in the feed—hay, roots, and corn. The manure is taken out two or three times during winter, when the ground is frozen, so that it can be taken on to the fields. When not in use these portable racks are piled up at one end, leaving the room free for driving in teams to haul out the manure. Two men can handle them readily. To reach the sheep, or let them out or in, the ends of the racks can be swung round like a gate. They are made by contract at a neighboring shop, at the cost of 15 to 16 cents per running foot.

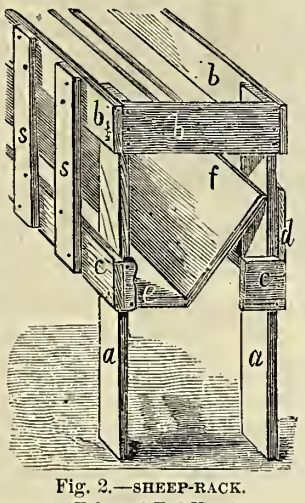


Fig. 2.—SHEEP-RACK. *(Enlarged End View.)*

The Lambs were Sheared in December.

The warm room, with the heat of the flock, kept them from being cold, and they maintained a healthy condition. Abundant straw was daily supplied, to thoroughly absorb all liquid and solid droppings, and furnish dry warm bedding. As it accumulated, the feeding racks were raised to stand upon it. It was believed that the lambs would grow and fatten faster, with the wool thus removed, while the wool-clip sold for nearly enough to pay the purchase cost of the animals—owing to the extraordinary advance in price last winter. (The farm account-book shows the sales from 500 lambs of 2,733 lbs. of wool, unwashed, for $1,071, or about 39 cents per lb.) These lambs were mainly grade Merinos, estimated to average about 50 lbs. each, when bought.

Feeding and Profits.

The lambs were supplied all the clover hay they would eat, and they nibbled somewhat upon the fresh straw as it was daily supplied for bedding. They also had corn *in the kernel* (unground) beginning with one bushel per day for each 100 lambs, and gradually increasing until they finally had all they would eat. They also had daily rations of turnips (mangels); the 900 lambs and 200 sheep consumed 8,000 bushels—say 7½ bushel each—during the winter. After three months feeding, they had increased to an average of 97 lbs. each (varying from 80 to 130 lbs.); they were in high condition, and were taken by dealers, in two large lots, mainly for the New York market, at five and five-eighths (5⅝) cents per lb., live weight, or over $5 per head. The price received for the wool, with the final sale, left just $5 per head for three months feeding and care. No account was kept of the cost of the feed or of the value of the manure; the feed being all grown upon the farm, the profits went into the general profits of the farm for the year. (In another conversation we learned that the sales from 130 acres, divided between the Owner and Lessee, after deducting the cost of 500 lambs, amounted to $4,400, or $33.84 per acre—$16.92 per acre going to the owner for the use of the land, with the soil in an improved condition, and the large supply of sheep manure to enrich it still further for future crops. Mr. Keep gives large credit to the Lessee, Seneca B. Foot, for the successful results obtained.)

Soiling Stock—Hiring Sheep Pasture.

Mr. Keep believes it more profitable to have all his arable land constantly growing crops. Clover seed (with no Timothy) is sown freely every spring upon the wheat fields, with 100 to 150 lbs. of plaster per acre, sown broadcast. The meadows are usually mown twice a season, and the cattle are kept in yards, but allowed the range of the wood lots in hot weather. He supplements any deficiency of clover to furnish a full supply of hay, by using Hungarian grass, sowing 3 pecks of seed broadcast, on well manured land, and cutting and curing the crop just like other hay. The stock sheep are hired out to pasture on neighboring farms at 2½ to 3 cents per week each, during summer, where they have a partial range of woods, and they are fed during winter on clover and mangels, with corn if to be fattened off for spring mutton.—All the wheat and other straw is housed in the large barns, and used freely enough to absorb the entire solid and liquid manures from all farm animals. Both cattle and sheep pick it over and eat more or less of it with their richer clover and Hungarian grass. The amount of good manure thus secured from the live stock keeps the fields up to a high state of fertility.

Phosphates Producing no Effects.

While some farmers in the vicinity have found Superphosphates of much benefit, this has not been Mr. Keep's experience. He asked us to go through a wheat field which had received 200 lbs. per acre of Lister's Superphosphate, and pick out the strips left without Phosphates for comparison. We were utterly unable to select them or to find any difference in the growth of straw, or size and plumpness of the heads, though we passed back and forth across the strips *with* and *without* phosphates. Before giving it up, Mr. K. will try another brand of phosphates, to see if the lack of effect upon the grain crop be not due to poor quality.

Wheat after Wheat.

The field of 22 acres above referred to is mostly a heavy clay, drained only by ridging and deep dead-furrows. In 1878, it was an oat stubble, with little vegetation upon it. After summer-fallowing it was sown to wheat; the dead-furrows were too shallow, and it drowned out so as to yield only 10 bushels per acre, and the clover did not catch. After cutting the wheat, 250 sheep were turned in, and they ate up about every green thing, including a considerable supply of Canada thistles, of which they even ate the plowed up roots, so that none are visible this year. As it was plowed, the soil turned up in large clay lumps. These crumbled in the sun and rain by the last of August, when the harrows and clod-crushers were kept on until the surface was fine. Five heavy loads per acre of well-rotted manure were harrowed in, and the first week in September wheat was drilled in with 200 lbs. per acre of phosphate above noted, except on the test plots. The dead-furrows were cut deeply and clover sown last spring, which shows a good catch.—To-day (June 15) the whole field shows good for 25 to 35 bushels per acre, the latter on the dryest portions. It goes against the opinion of those who predicted a failure in wheat after wheat. But this is a strong clay soil, and it was finely manured, besides the previous crop was poor.

A Half-Stone House, Costing $2,000.

BY S. B. REED, ARCHITECT.

The design here given represents a substantial and convenient house for well-to-do farmers, or others, who may find it suited to their circumstances. The outside walls of the first story are of stone, and for this reason the design will be of special interest to those living where building stone is at hand. In point of economy, where stone walls are determined upon, there is an obvious advantage in this half-stone method. The ratio of cost in all masonry increases in proportion to the difficulty in elevating and handling such heavy materials above a convenient hight....**Elevation** (fig. 1).—The outside and openings are symmetrically arranged. The walls of rough masonry accord entirely with the sense of fitness for all rural structures, and they may be made very pleasing in appearance by distributing close clinging vines along their sides, which soon grow, and add greatly to the home-like aspect. The foundation or cellar walls show 18

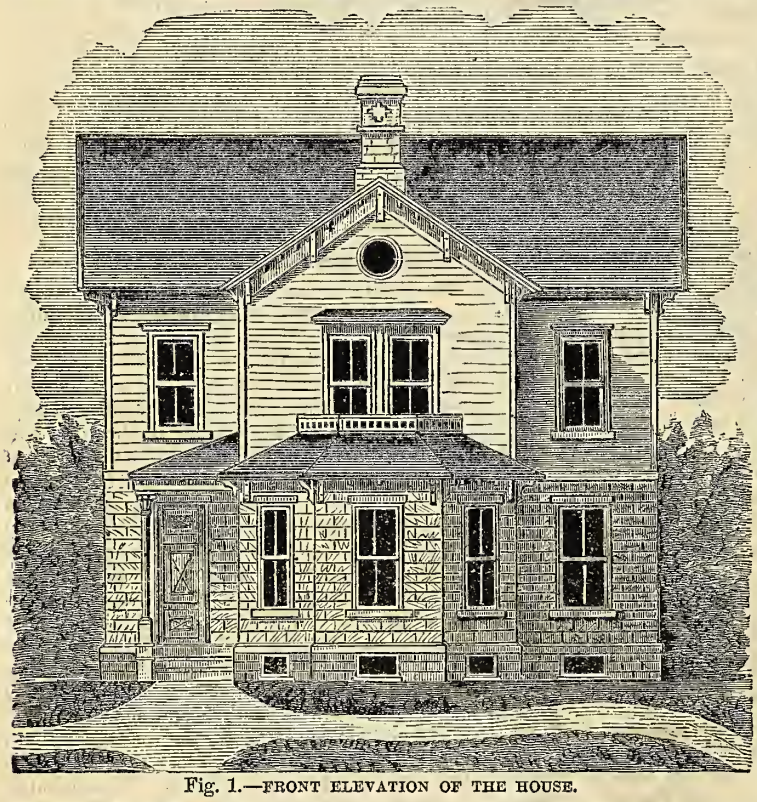


Fig. 1.—FRONT ELEVATION OF THE HOUSE.

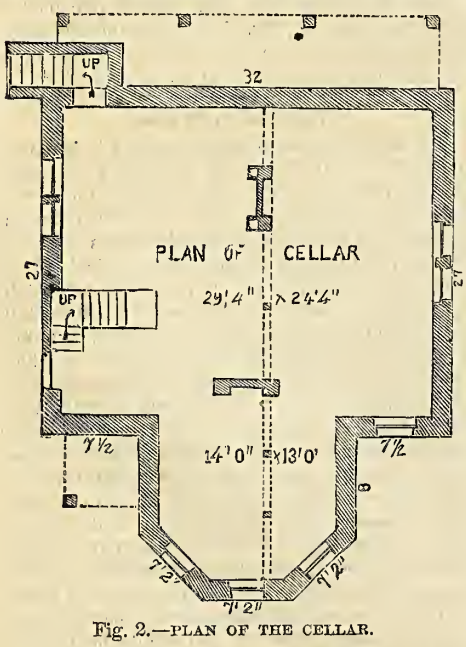


Fig. 2.—PLAN OF THE CELLAR.

inches above the ground, just sufficient to allow for windows to supply necessary light and ventilation to the cellar. The principal walls being of stone, there is very little outside wood-work to be destroyed by dampness from the ground or shrubbery. The body of the building may therefore be set as low down as desirable for convenience. The site, however, should be elevated, for dryness and appearance. The earth taken from the cellar excavations will be sufficient in most cases to raise the grounds one foot immediately surrounding the house....**Cellar** (fig. 2).—The hight is 6½ feet. It has suitable windows for light and ventilation, and at the same time is sufficiently below ground to be warm in winter and cool in summer. An outside entrance is placed under one end of the rear veranda. The Chimneys are centrally located, and have openings in them for ventilators leading through continuous flues to the top. Stairs are arranged leading to the kitchen above. .....**First Story** (fig. 3).—Hight of ceiling, 10 feet. A hall, three rooms, pantry, rear entry, and closet form the general divisions of this story. There are three outside entrances, one in front and two in the rear. The Main Hall is of convenient shape and size, and is entered from the front porch; it connects with each of the principal rooms, and contains the main stairs. The Parlor is octagonal in form, with openings symmetrically arranged, and with windows disposed to the best advantage for outlooks and views. The two sides are unbroken, giving space for wall furniture. The Dining-room is of fair dimensions, and is accessible from the outside through the front hall and rear entry; it is in convenient connection with the parlor and pantry, and has windows in front and on one side. The Kitchen is conveniently arranged, has an open fire-place suitable for a range, with a large double window opposite; it connects through doors with the main hall, pantry, cellar stairs, and rear veranda, and contains a pump, sink, and three wash-tubs. The Pantry is full size, has an outside window, and is thoroughly shelved. The rear entry is designed as a private entrance, and has cleats and hooks for overcoats, etc. The chimneys are located where the warmth will be saved to the interior, and greatly lessen the quantity of fuel required to keep the house warm in cold weather....**Second Story** (fig. 4).—Hight of ceilings, 8 feet. There are a hall, four chambers, a bed-room, and four closets. It will be seen that there is no waste room. The stair-landing or hall is in the center, and though occupying but little space, has five doors leading to the several apartments, besides one door opening to the garret stairs. Each of the rooms is of fair dimensions, and has abundant window openings. The head-room for the main stairs is partially taken from the bed-room floor, forming an angle, with clear head-room from the ceiling below to the face of the partition seen to cross the stairs.—This angled portion is "squared up," forming a shelf in the bed-room....**Attic.**—The plates show 2 feet, and the center 11 feet above the floor. The whole is floored over roughly for storage, etc....**Construction.**—The cellar and first story walls are of broken stone laid in best mortar, in the cellar 18 inches thick, and in the first story 16 inches. All sills and lintels are of blue stone. The frame is of sawed timber of sizes indicated in the estimate. The siding for the upper portion is clap-boards, laid on sheathing boards of even thickness. The roofs are of shingles laid on spruce lath. The inside flooring is of 8-inch spruce tongue-and-grooved; outside of 4½ inch pine. The cellar windows have three lights each, and are hung with butts; all other windows four lights, hung to balance weights with best cord. All doors are of pine, panelled and molded. Plumbing as described in *American*

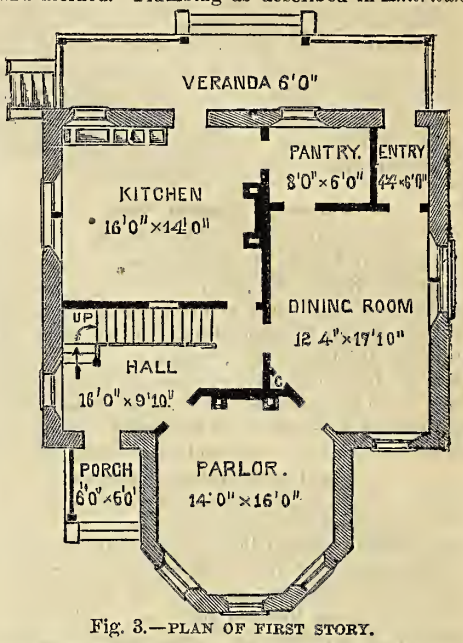


Fig. 3.—PLAN OF FIRST STORY.

Agriculturist for March, 1880, page 93. Plastering three-coat work. Painting two coats....**Estimate.**—Cost of materials and labor:

115 yds. Excavation, at 25c. per yd				$ 28 75
134 perches Stone-work (complete), $2.75 per perch				368 50
130 feet Blue Stone (sills, lintels, and area steps), at 12c. per foot				15 60
5,000 Brick in chimneys (complete), at $12 per M				60 00
660 yds. Plastering (openings out) (complete), at 25c. per yd				165 00
6,000 feet Timber, as follows, at $15 per M				90 00
1 Girder	4x8 in. 38 ft. long.	14 Beams	3x8 in. 18 ft. long.	
17 Beams	3x8 in. 15 ft. long.	14 Beams	3x8 in. 14 ft. long.	
12 Beams	3x8 in. 17 ft. long.	8 Beams	3x7 in. 16 ft. long.	
13 Beams	3x8 in. 13 ft. long.	14 Beams	3x7 in. 18 ft. long.	
Sills	3x8 in. 140 ft. long.	14 Beams	3x7 in. 14 ft. long.	
11 Posts	4x7 in. 10 ft. long.	2 Valleys	3x7 in. 14 ft. long.	
2 Ties	4x6 in. 9 ft. long.	36 Rafters	3x5 in. 18 ft. long.	
Ties	4x6 in. 27 ft. long.	18 Rafters	3x4 in. 11 ft. long.	
Ties	4x6 in. 16 ft. long.	1 Ridge	3x8 in. 35 ft. long.	
1 Plate	4x8 in. 32 ft. long.	1 Ridge	3x7 in. 18 ft. long.	
4 Plates	4x8 in. 9 ft. long.	1 Veranda	3x7 in. 66 ft. long.	
16 Beams	3x8 in. 16 ft. long.			
75 Joists, at 15c. each				11 25
200 Wall Strips, at 12c. each				24 00
150 Sheathing, 9½ in. (body of 2d story), at 25c. each				37 50
260 Siding (6-inch Clap-boards), at 12c. each				31 20
32 wide Ceiling for Gables, at 28c. each				8 96
Cornice materials				35 00
350 Shingling Lath, at 6c. each				21 00
57 bunches Shingles, at $1.25 per bunch				71 25
200 feet Tin, Valleys, Gutters, and Leaders, at 8c. ft.				16 00
54 feet 4-inch Flooring (for outside), at 25c. each				13 50
345 feet 8-inch Flooring (for inside), at 28c. each				96 60
9 Cellar Windows (complete), at $3 each				27 00

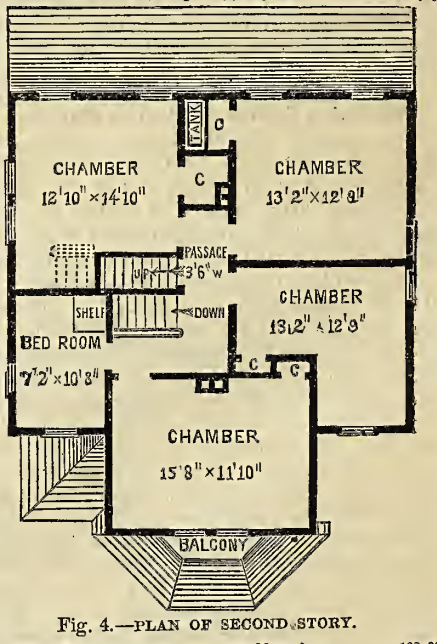


Fig. 4.—PLAN OF SECOND STORY.

24 Plain Windows (complete), at $8 each	192 00
22 Doors (complete), at $8 each	176 00
Porch and Veranda (complete)	80 00
Stairs (complete), $40; Mantels (complete) $40	80 00
Closet finish (complete)	15 00
Plumbing (complete, $50; Carting, $15	65 00
Painting (complete)	100 00
150 Furring Strips 1x2x12, at 4c. each	6 00
Carpenter's labor, $120.00; Incidentals, $94.89	214 89
Total	$2,000 00

The Jersey Cow "Eurotas."

In April, 1873, Col. R. M. Hoe, sold out his herd of Jerseys. They were chiefly, perhaps entirely, of his own importation and breeding. The sale was widely advertised, and largely attended, and Mr. A. B. Darling, of Darlington, N. J., the well-known host of the Fifth Avenue Hotel, paid the highest prices, and bought the best animals. For "Vesta," (1235), an imported cow, bred by Lord Rokeby, and of the Dauncey Stock, he paid $700. For "Leda" (799), a daughter of "Jupiter" (93), and "Alphea" (171), he paid $640. For the bull "Sarpedon," a son of "Mercury" and "Europa," (own brother and sister—by "Jupiter," out of "Alphea,") $630. With these he bought "Eurotas," (2454), for $325. She was three years old, half sister to "Leda," and not so handsome.

THE FAMOUS JERSEY BUTTER COW "EUROTAS," (2,454).

Mr. Darling was disappointed in the performance of "Vesta." "Leda" proved with him an excellent butter cow, but was surpassed by her half-sister, which is the subject of this sketch. "Eurotas" is the daughter of "Rioter 2nd," a bull imported by Col. Hoe, bred by the Marquis of Bristol, and descended from the famous Dauncey herd, and "Europa," a daughter of "Jupiter," out of "Alphea," his full sister, they being by "Saturn," out of "Rhea," both imported by Col. Hoe, directly from the Island of Jersey. "Eurotas'" pedigree, so far as we know it, therefore runs thus (imported animals in Italics):

Eurotas 2454 { *Rioter 2d*, 469, bred by the Marquis of Bristol. / Europa 179 { Jupiter 93 { *Saturn* 94 / *Rhea* 166 } / Alphea 171 { *Saturn* 94 / *Rhea* 166 } }

A short pedigree, but an instructive one. "Rioter 2nd," was no doubt a very well bred bull. He showed it in his appearance, and proves it in his get. "Europa" was the result of close in-breeding, a strong, vigorous, healthy animal, showing not the least evil results from such near couplings. She is still alive, breeding regularly, and was sold in May last, for a high price. "Rioter 2nd" was therefore an entire, and strong out-cross upon the "Alphea stock." The result to be expected, was that the offspring would possess those qualities, for which the parents had been bred, in an intensified degree. "Europa" was not a very extraordinary milker or butter maker, so far as known, (perhaps she has never had a first rate chance), but "Alphea" was, and so was "Rhea," doubtless also there were extraordinary milkers and butter yielders in "Rioter 2nd" line, for the Dauncey herd was bred with extraordinary care, both for color, and for excellence at the pail. "Eurotas" has been bred as a "winter cow," that is, to calve in the late autumn, or early winter, and though yielding well, does not come to her full flow, and yield of butter, until grass comes. This is remarkable, that a cow calving in December, should give more milk in May, than at any time during the winter, but so it is with "Eurotas" this year, and the same was true last year, though less accurately observed. The extraordinary production of butter of this cow, was not observed until about two years ago. She is not handsome, though well shaped; in fact, has the ideal form for a milch cow, not exaggerated. She was bought at a lower figure than the other cows, and for this reason great things were not looked for, and her milk went in with that of the common herd. How many cows are there whose milk is thus mixed with that of others, which, if kept by itself, might prove them the peers of even this wonderful cow?—A question which, though it cannot be answered, is not the less worth considering. Col. Hoe made to the writer an interesting statement of how he came to import Jerseys, and such Jerseys. His first importations of cattle, were two Shorthorns, and one Devon, all pure of course, and when showing his little Devon cow to Mr. Edward Faile, whose Devon herd was at that time the best in the country, he told him that if he wanted cows of a pure breed for "Brightside,"—his beautiful country place, now within the limits of the City of New York—he would advise Mr. Hoe to settle upon Jerseys, and that if he would import a heifer more than he wanted for himself, on his next trip, he would take one. This Mr. Hoe did, and being referred by a business friend in London, to Lawrence P. Fowler, the younger member of the firm of Michael Fowler & Son, he gave him a *carte blanche* order for half a dozen heifers and a young bull, to be selected with care, and shipped within six months. Richardson, and others, were importing Jerseys to New York, and limiting Mr. Fowler in his purchases to £5, or $25 a head, first cost. The six heifers and bull cost Col. Hoe between 18 and 19 guineas each, on an average, besides commissions. The famous animals of this importation were "Saturn," "Rhea," and "Edith." Mr. Faile was offered first choice, but declined it, and Col. Hoe's manager selected "Rhea," Mr. Faile taking "Edith." It was stock tracing to this cow "Edith" (167), which being crossed with bulls of the "Alphea Family," brought the high prices at Mr. Kellogg's recent combination sale.

The animals of Col. Hoe's importation, were without doubt much better selected, and worth

more than those which American breeders were at that time familiar with. Those which were selected in England, proved exceedingly good. They were the progeny of animals bought on the Island for English breeders, and selected doubtless in much the same way. The dealer taking time, making his selection, and paying the farmer's price. The rules of the Am. Jersey Cattle Club exclude these English bred animals now, unless they can be traced back, animal by animal, to the Island. Why this rule should prevail now, to exclude such animals as "Rioter 2nd," and "Vesta," we do not know, and certainly it seems unwise; and how it comes that these animals, tracing simply to the herds of well-known, reliable English breeders, were admitted to registration, does not appear.

"Eurotas'" Butter record has been repeatedly given for one week, namely, 22 lbs. 6 ounces. She has been tested this year since her calving in November—the test beginning Nov. 10th.—Between this date, and April 10th, she yielded 364 pounds, 15 ounces of butter, according to a statement published by Mr. P. C. Kellogg. From him we obtain the results to June 10th, as given herewith.

For five months ending	April 10.....	364 lbs. 15 oz.
" the month "	May 10.....	73 lbs. 13 oz.
" " "	June 10.....	91 lbs. 9 oz.
So far, in seven months from calving..		530 lbs. 5 oz.

This last monthly statement shows over three pounds of butter a day, for the seventh month after calving, and about the fifth of pregnancy. For the last day of the record, the amount of butter is estimated, being taken at half that of the two previous days. Churning is done on alternate days, that of the 9th and 10th being churned together.

The portrait we present, is copied from a painting by Mr. H. S. Kitteridge of this City, kindly loaned by Mr. P. C. Kellogg, and is a most accurate picture of the cow. It is hardly necessary to direct attention to her characteristic wedge shape, heavy at the rear, and thin and delicate forward, or to the enormous lacteal development, or indeed, to the roomy frame, and capacious abdomen, offering plenty of room for the digestive and assimilative apparatus, which must be in the very best order for such work as she is doing with ease and enjoyment all the time. "Eurotas" is of a brown color, lighter upon the legs and ridge of the back, where it approaches gray. She is an animal of excellent constitution, as shown by her form, and proved by her performance. She is thick through the breast, having a deep sound chest, good muscular development, and excellent under pinning. She will do well on a mountain pasture, in all weather, and no doubt equally well stall fed, and with little exercise.

Among the Farmers.—No. 55.

BY ONE OF THEM.

I was greatly distressed by the drouth this spring. My oats were set back wonderfully, though in good season, and as I have had rather poor luck in seeding with spring grain lately, I concluded to sow no grass-seed, but cut early and sow grass with turnips on the oat stubble.

The rag-weed and smart-weed made their appearance early among the oats and, of course, grew in spite of the dryness of the soil. I was led therefore to my first experiment in

Harrowing Growing Grain.

I used a Thomas' harrow, and the soil was like an ash heap. There had been corn on the ground last year, on part of it at least, and the stalks were not all covered and there were a few stones. Where the harrow teeth caught a corn-stalk destruction was wrought, apparently at least, and a loose clod or stone, or any thing that would drag, made havoc also. Where the harrow ran unimpeded it was bad enough. I could not sit on the harrow—that made things look too bad, but I did make two or three bouts for experiment sake. The Thomas' harrow, consisting, as it does, of three small harrows drawn abreast with a seat for the driver straddling over them, so that if the driver sits in the middle, the pressure of his weight will bear evenly upon all, is not handy to turn sharp corners with, and I found I could leave unharrowed half-moon shaped patches in the corners much easier than not. In a few cases I did so for the sake of comparison.

A sorrier looking field of oats I never saw than that was after once going over. I felt sick, and my man, Michael, held up his hands aghast.

We had one or two scorching days. The weeds, still very small, were killed where ever sufficiently disturbed. Then we had a fine shower, and the prostrate crop revived wonderfully. The result upon the weeds was so satisfactory, that after harrowing the potatoes just showing the rows well, in part of the same lot, I put the harrow on to the oats for the second time, still leaving some of the corner patches which were missed by the harrow the first time. The oats were six to ten inches high, measuring the full length of the leaves of some that were torn out. If I regarded it a piece of heroism to go on after the first bout at the first harrowing, it was doubly so the second time, and I hesitated seriously. One crop of weeds had been pretty well killed, another was just showing itself in the seed leaf, having sprung up after the shower, but the oats were so large, I argued, that these will never have a chance at light and air until after harvest, and then they will be plowed under. I resisted temptation and harrowed away. The crop looked worse than ever, and seemed to pick up very gradually during the excessively dry weather. We had rains after a while and it started and soon looked as if nothing had happened, and now, June 12th, is a pleasure to behold. I have never had a grain crop so free from weeds. Another year I will plan to harrow four times at least, especially if the weather be moist. In dry weather the weeds are most effectually killed, but more of the oats are dragged out too. I have heretofore reported the experiments of my neighbors in harrowing grain, but this is my own, and as the results tally well with those previously reported, I am well satisfied to inaugurate the new practice and follow it at least until we get to hoeing grain, which I well believe is superior practice.

Big Horses.

There is a remarkable change in the size of loads drawn in our principal cities, especially in Boston and New York. Boston has taken the lead in this matter, and her buyers have picked up blocky, heavy horses all over the country, while New York has been satisfied with highth. The leggy, sixteen to seventeen-hand brutes which we see here would not sell there, for they go all for weight. For steady draft, large slow moving teams do their work more economically than quick moving ones. It is far better to go once with a heavy load than twice with light ones. It is your comparatively small, quick going, nervous horses that balk. Sometimes a heavy horse will refuse to draw, but rarely.

At the French sale stables they put a horse—any draft horse they have to sell—before a dray with locked wheels and make him draw it, or at least do his "level best," scratching like a cat, the fire flying from the pavement, to show that he will not balk. Where they sell draft horses in this country they make them trot off to show their fine action and style. But we are learning fast, the Percheron, Norman, and Clydesdale stallions that come over on almost every steamer, are fast making a change and the trucks are getting larger every season. Now we need better pavements and better country roads, so that we can use the enormous power of these large horses to the best advantage. I was speaking about them to Thomas Galbraith, formerly manager for Mr. Thorne at the time he had the famous Duchess Herd, and he told this story about

London Truck Horses.

Mr. Galbraith took two large bulls, "Lord Oxford," and one of the "Thorndale Dukes," I believe, out to England for the purchaser. He landed in London and wanted to get them across the city to a railway station, distant about three miles. Rather than lead them over on the always slippery pavements he concluded to put them on one of the low-hung truck, or platform, wagons which they use for moving heavy freight, like molasses and sugar hogsheads. The owner of a line of one-horse vehicles of this character on a stand, named 14 shillings ($3.50) as the price he would let him have a truck for. "Is not that a high price?"—"No, it's right, they're good horses," said the truck owner.—"Well," said Galbraith, "I will give them a pretty good load."—"See here," said the other, "if you mean to put over *three tons* (6,720 pounds) behind one of my horses for that trip you can't have them at all."—When afterwards Galbraith came along with the two bulls, one weighing 2,400, and the other 2,200, standing together on the platform drawn by one horse, he was greeted: "Ha-ha! Is that what you call a 'pretty good load'?"

We will come to this one of these days in this country, but we must have better roads, heavier horses and stronger trucks. It is rare to see over three tons behind a pair of horses in New York. Six-ton loads are certainly as frequently seen in Liverpool and London as loads of half the weight are here.

Feed for Butter.

At this time when so much attention is given to butter production, we are naturally on the lookout for fodder that will improve both the quantity and the quality of that product. Corn fodder holds a deservedly high place as milk-producing food, but the quality of the milk is thin unless meal be added to the stalks, or fed in connection with them.

Mr. L. W. Ledyard, of Cazenovia, Madison Co., N. Y., has a fine herd of Channel Island cows, both Jerseys and Guernseys, and finds that Golden Millet fed to his cows produces a marked change in the quality of the butter and probably also in the quantity. The butter comes much firmer and of a more granular and waxy texture. I did not have the opportunity to question Mr. L. very closely, so as to learn his full experience. He has, however, established the fact to his own satisfaction that this is the best food he can give his cows to secure the best *quality* of butter. I would have been glad to know how Hungarian or other millets compared with it. The comparison in Mr. Ledyard's mind was clearly as between hay and corn fodder, and Golden Millet. Wheat bran is a milk-making food, but it does not increase the butter very much. Cabbages and turnip tops increase both the milk and the butter, but do not improve the flavor. Parsnips and carrots certainly and largely increase both the quantity of the milk and yield of butter, and improve the quality of the latter. Sugar beets and mangels are among the best milk producing articles of bovine diet, and the quality does not suffer so far as I know. How important it is that we should have *experiments*, yielding definite and valuable results. I believe the New York Legislature passed a bill for

An Experiment Station

at the last session. Efforts had been made before for an appropriation for such an end, and now we presume we may give the credit to the known interest of the Governor in the institution named in honor of his father, and which in the popular mind has always been an Agricultural College. The success of such an "Experiment Station" does not depend upon appropriations, though money is always necessary. It too often happens that money easily obtained, as by vote of a Legislature, or Act of Congress, is easily spent, and that without accomplishing the ends intended. When such an institution *grows by its own necessities*, under judicious management, it is sure to accomplish great good. There are hundreds of problems presenting themselves to the thinking farmer, and student of agriculture, which can only be answered on the farm, in the feeding stalls, or pig pens, in the dairy or in some other practical way; where the land and the manure heap, the live stock and their products, the chemical laboratory and microscope, and the whole range of philosophical instruments from rain-gauges to lactometers, in one way or another, in good earnest hands, coöperate to bring about valuable results.

Preparation for Fall Crops.—There is the good and the poor way of preparing the ground for the reception of the seed of the crops sown in the fall. The large average yield of the wheat crop of England is due in a great measure to the great care

taken to prepare the ground for the best growth of the wheat plant before the grain is sown. The fields that are imperfectly plowed and indifferently harrowed are far too common with us, and until the soil is made deep and mellow by thorough tillage, all the manure and artificial fertilizers we may apply will not bring the yield of our fall sown crops to the most profitable point. A little extra work in preparation will many times bring a large margin of profit when it comes to gather the harvest.

Tenant Farming.

In the Eastern and Middle States there are thousands of farmers of small means who either can not, or do not wish to, "go West." These must occupy rented farms, and, in many cases, be content to do so for a long term of years. Under the present revival of interest in agriculture, and as methods of cultivation grow more elaborate and expensive, the tendency will probably be towards an increase of this class; and, therefore, much of the farming of the future, in the section named, will depend for its success on a satisfactory working of the landlord and tenant system in some form. Why should not the co-operation involved in working a farm "on shares," for instance, be as satisfactory and profitable to both parties, on an average, as other partnership? I assume that it is not generally a success, that being the prevailing impression, and it becomes important to know whether the reasons for failure may not be removable. Why should not tenant farming with us do, not only as well for both owner and farmer as is usual in England, but *better*, because of our superior advantages in climate, markets, etc.?

There are large amounts of capital in the East looking in vain for investment at from four to six per cent. There are also thousands of farms within easy reach of our seaboard cities, that instead of being *worked* are "muxed," as a Jersey friend of mine puts it, the condition probably standing at its worst, as a rule, where the occupant is a tenant. Now, is this situation without remedy? Why would it not pay for men who have capital and some knowledge of, and taste for, farming (although in other business), to buy these farms,—they are always for sale—rent to a *first-class* farmer "on shares," spend some money in improving the land, and "push things" generally? I say *on shares*,

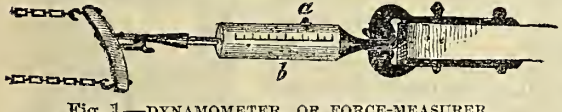


Fig. 1.—DYNAMOMETER, OR FORCE-MEASURER.

because, under the present condition of farming, probably, with a fixed money rent, the temptation would be for the owner to neglect and for the farmer to "skin" the land. It seems reasonable that such a *double team* should be able to do much more with a farm than any one party of moderate means. I should be glad to see some comments and criticisms on these points. If it can be shown that much of the capital now made a foot-ball of in

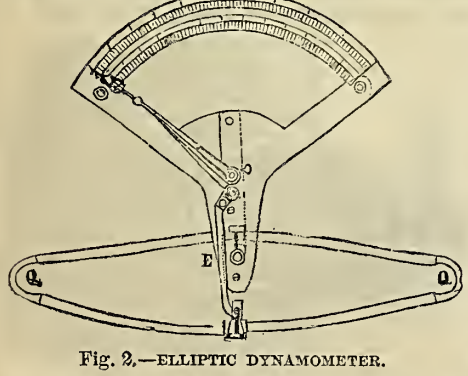


Fig. 2.—ELLIPTIC DYNAMOMETER.

our large cities, can be profitably put against the skill and labor of farmers who have means to *properly stock and work* a farm, but not sufficient to buy it, I think a long step forward will have been made in the agriculture of the Eastern and Middle States.

PHILADELPHIA.

Dynamometers, or Force Measurers.

The working of all machinery requires power or force, and it is of great importance to be able to measure this force. To this end Dynamometers have been constructed. The simplest form of the power or force-measurers—for that is the meaning of their name—is shown in figure 1, and consists of a coiled spring encased in *b*, bearing an index, *a*, which moves along a graduated scale as the coil is extended. One end of the Dynamometer is fastened to the object upon which the force acts, as a plow or mowing machine, and the other is attached to the source of the power or force; the horse, ox, or steam engine. It is evident that this instrument in its simplest form is only a very strong and heavy spring balance, and is used for "weighing" the force exerted by a horse, for example, instead of the *pull* of gravity as the balance does in simple weighing. The amount of force to draw a plow, for example, is shown by the place the index takes upon the scale. A second form of Dynamometer is shown in figure 2. The ends of the oval spring, *Q*, *Q*, are attached to the draught and object drawn. The greater the force exerted the nearer the sides of the spring will be brought together, and the amount of power is shown by the pointer, which is moved along the scale by the rod, *E*, pressing on the base of the pointer. A third form of Dynamometer is shown in figure 3, bringing the spring, *S*, *S*, and the graduated scale near together, thus making the instrument more compact. In the first and second forms there is a great inconvenience and lack of accuracy arising from the rapid vibrations of the index caused by the unequal resistance of the object at different moments, and the unsteady motion of the horses. The trouble is removed in the third kind, by attaching to one end of the index, *E*, a piston which works in a cylinder, *C*, filled with oil. The piston has a small hole through which the oil passes from one side to the other as the draught varies and causes the piston to move, and does away with any sudden or jerking motion. A more accurate instrument is the Self-recording Dynamometer, which marks all the vibrations upon a strip of blank paper by means of a pencil fixed on the index. The paper is moved along slowly by being placed on two rollers, one of which unwinds the paper upon the other. The rollers which carry the paper are turned by a wheel running on the ground, and giving its motion to the rollers through an endless chain, and working the cogwheel of an endless screw. A Self-recording Dynamometer is shown in figure 4, and a portion of the paper showing the record is given in figure 5; the short lines, *a*, *b*, show the quick changes of the index. With this attachment a permanent register is made of the force required for the working of different implements, and with an accuracy beyond dispute.

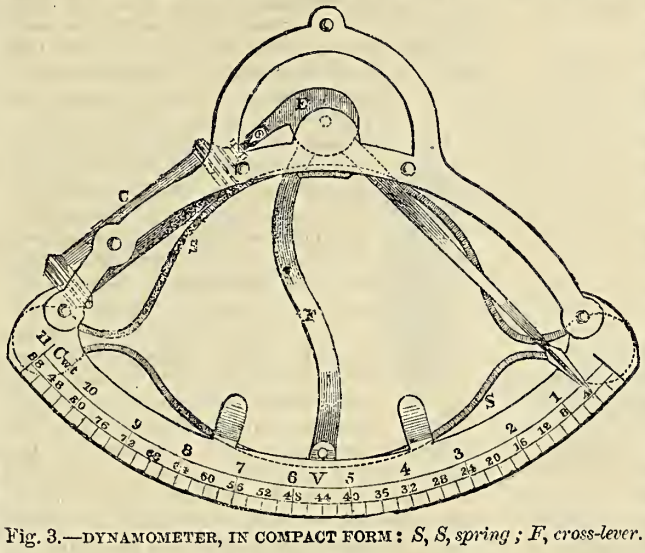


Fig. 3.—DYNAMOMETER, IN COMPACT FORM: *S*, *S*, *spring*; *F*, *cross-lever*.

The importance of a *force test* in deciding upon the merits of a plow, mowing machine, etc., is greater than it might seem at first sight. Two plows may do the same work, and do it equally well; but the Dynamometer may show that one requires a fourth more force than the other. There would be a great saving in such a case in buying the plow with the lighter draught. Figure 6 is the Dynamometer now much in use; it is strikingly simple in its construction, as the illustration shows, and made by Fairbanks & Co., of "Standard Scale" renown. These instruments range in capacity from 600 to 2,000 lbs. We do not claim that the measurement of the force by the Dynamometer is perfectly accurate, but it is acknowledged as an instrument of great value in testing the draught of machines, and to its use in the various trials of mowers, reapers, plows, etc., at fairs and elsewhere, we are doubtless indebted to the great improvements in lessening the draught of farm implements. When the test is made with great care, and the trials are of sufficient length and variety, there is no other method equal to that of the Dynamometer.

Autumn Seeding to Grass.—It is the general custom to seed to grass after some grain crop, as wheat, oats, or barley; but when it is desired to get a field into grass in the quickest possible time, this practice need not be followed. Grass and clover seed may be sown this month with the probability of success. This is not without its risks; a dry spell may prevent the seed from germinating until the season of growth is pretty well passed, when only a poor "catch" will be obtained. A shelter to the young grass and clover plants that will protect them from the hot sun, and at the same time prevent the soil from becoming too dry, is very desirable. For this purpose no crop is better adapted than white turnips, which grow quickly, and with their broad leaves make a protection to the grass seed and young plants, and shade for the soil. For the good of the grass it is not best to have the turnips grow very large, otherwise there may be danger from smothering; but a fair yield

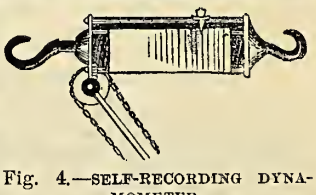


Fig. 4.—SELF-RECORDING DYNAMOMETER.

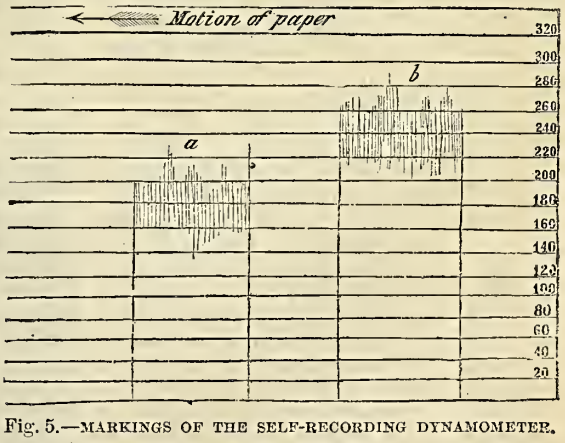


Fig. 5.—MARKINGS OF THE SELF-RECORDING DYNAMOMETER.

of turnips may be secured with no danger to the grass. The turnips should be pulled early, at which time the clover will be well started, and will soon thicken up and cover the ground before winter sets in. With a good dressing of manure, an early start may be secured in the spring, and a good crop of hay or a fine pasture results. When the soil is continuously moist, deep and mellow,

Fig. 6.

the grass seed may be sown alone; but in most cases it is safer to provide a shading crop, like the turnips, besides a good return for the preparation of the soil is at once obtained in a valuable crop of roots for feeding the stock in autumn or early winter.

The Sheep Rot, or Liver Fluke.

The wet season of 1879, in England, has been followed by an unusually fatal out-break of the "Rot" among sheep. At five other dates during the present century, wet seasons have preceded visitations of this very destructive disease, namely: in 1808, 1817, 1824, 1830, and 1853. The association in time of the prevalence of the "Rot," with a season of unusual rain, is enough to suggest that there may be some direct relation between the two. Through investigations of such naturalists as Dr. Cobbold, Von Siebold, and others, the precise nature of the Sheep Rot has been discovered, and the relation between the wet season, and the unusual abundance of the disease established. The "Rot" is caused by a parasitic animal known as *Distoma hepaticum*, which takes up its abode in the ducts in, and leading to, the liver, and hence popularly called Liver Fluke. The Fluke is a sucking worm resembling the leech,

Fig. 1.—THE FLUKE, FULL SIZE.

of a flat, oval shape, thick and rounded at one end, and provided with a sucker or mouth. The full-grown parasites are shown, separated from the liver, in fig. 1, and small ones, but partly grown, are represented in fig. 2. These little animals are quite highly organized, being provided with a digestive apparatus, and a branched intestinal canal, fig. 3, and a system of veins and blood vessels, shown in fig. 4. The life-history of this parasite, about which in former years there was much conjecture, and even dispute, is now thoroughly understood. The mature Fluke, as found in the sheep's liver, is the end of a series of transformations, which we will trace from the egg of the perfect Fluke, through its changes, around to the full grown Fluke again. The egg, after leaving the Fluke, finds its way into the intestines of the sheep, and is expelled with its exerement. If the egg falls upon dry soil, and no water reaches it, it soon perishes; if, however, the egg meets with sufficient moisture, it soon hatches into a small embryo, which is propelled by minute hair-like appendages. In a short time legs are provided, and the young Fluke becomes a crawling "worm." In this form it gains entrance to the body of some snail, and begins its parasitic life. Within the flesh of the snail, the Fluke becomes encysted, or enclosed in a kind of sac, in which state *buds* are formed, which, breaking away, leave the snail, and become like small tadpoles, moving about by means of their long slender tails. These again enter the snails and become parasitic, and afterwards encysted for the second time. In this pupa, or resting state, the Fluke is conveyed from the grasses, upon which the sheep feeds, into the stomach of the sheep, and once there, the final leech-like state of the parasite is quickly assumed, and finding its way into the gall ducts of the liver, it reaches its last state, and does its most destructive work. With this sketch of the development of the Fluke, it is easy to understand the relation between a wet season, and the prevalence of the "Rot" in the season following. The hatching of

Fig. 2.

Fig. 3.

the egg of the Fluke is dependent upon the presence of a considerable amount of moisture when it is passed from the sheep and falls to the ground. The young Fluke afterwards must enter the snail, but the snail lives only in water, or in very moist localities. In wet seasons, the number of such localities is extended, the number of eggs that hatch is greatly increased, as is the number of snails, bearing the parasite in its first stages. The Fluke often occurs in sheep, without its presence being suspected. It is only when it is sufficiently abundant to produce "Rot," that attention is called to it. In the first stages of the disease, there is an increased appetite, and a tendency to fatten. This has been taken advantage of by the English feeders, who it is said have purposely "Rotted" their sheep, in hastening them on to the shambles. This unnatural excitement of the first stages of the disease, is soon followed by a falling away in condition; the color of the eye, instead of its usual brightness, becomes tallowy in appearance, the skin becomes wet, and the wool loose. As the disease advances, dropsy develops, and a watery tumor appears below the lower jaw; the whole system becomes deranged, and in a short time the sheep is the pitiable object shown in figure 5. This engraving of a sheep in the last stages of "Rot," as well as those of the Fluke, are borrowed from that excellent and practical work, Stewart's "Shepherd's Manual." When an animal reaches this condition, the end soon follows, and the sheep dies in a state of rotteuness throughout.

Fig. 4.

Remedy.—Whenever the Flukes have found their way into the liver of the sheep in any considerable numbers, there is no practical way of removing them—death must shortly follow. Sheep may live, and even thrive when infested with Flukes to a slight extent: but the shepherd should always be on his guard against them. In the present case,

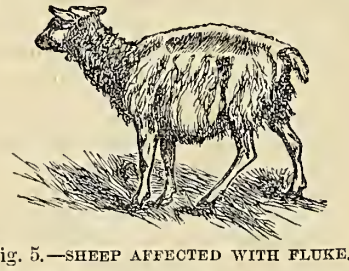


Fig. 5.—SHEEP AFFECTED WITH FLUKE.

the ounce of prevention is worth far more than the pound of cure, and therefore the flocks should be kept from feeding upon low lands, and never allowed to drink from pools of stagnant water surrounded by dense vegetation, as in such places the fluke-bearing snails abound. The Liver Rot is in one sense very much a question of drainage.—A recent article in the "Agricultural Gazette" (London) on this subject states that the "tender Merino sheep first falls a victim, while the Lincolns, or still stronger cross-bred, stand the best." The Fluke has prevailed to some extent in this country; there has been a recent outbreak of it in Oregon, and we should profit by the lesson of the very serious loss abroad, and strive to keep our flocks from the pest, especially in seasons of, and those following, unusual rains, by guarding them from feeding in low lands where the infested snails may abound.

Curing Fodder Corn.—The chief drawback with fodder corn is the difficulty of properly curing such a heavy crop of succulent green herbage. When it is remembered that 30 tons per acre has been reached, the problem of curing is seen to be an important one. The French system of ensilage may in time come to the rescue and provide a method of preservation that retains the fodder in its green state; but the introduction of such a system must be slow, and until then the old method of dry preservation must be practiced. The putting together of large quantities of half-cured stalks must be abandoned, as it has been the greatest source of loss to those who have grown fodder corn. The mow should be thoroughly ventilated by shafts passing up through its center, and when the fodder is put in stacks, they should be of small size, holding but a few tons, and better still, provided with a shaft, made of a few boards, in the middle.

Hints and Helps for Farmers.

A CHICKEN COOP.—Mr. L. Prentice, Leavenworth Co., Kansas, sends a sketch and description of a chicken coop, which is given in figure 1. The frame is made of pine. Three of the sills are one inch thick and three inches wide, the front one being one inch square, and let into the lower corners of the side sills. The ridge pole is one inch square,

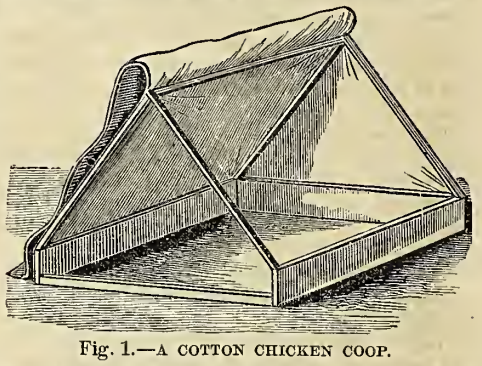
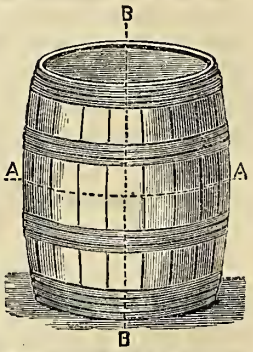


Fig. 1.—A COTTON CHICKEN COOP.

and the rafters are made of lath. The frame is covered with common cotton domestic, put on with small tacks. Five yards of domestic will cover four coops, and last two or three years if housed when not in use. Such a covering excludes the rain, snow, and wind, yet the sunlight passes through, giving warmth and light. Mr. L. writes: "We have never lost a chicken from a rain or snow storm while in these coops, and we use no other. A group of them resembles a camp-meeting ground. When necessary to close up the coop, as at night, we set up a board in front, or set two or more together, thus closing each other."

HEN'S NESTS FROM BARRELS.—Mr. L. W. Grayson, Jefferson Co., Miss., sends his plan of making nests from barrels as follows: Saw the barrel in halves through the line, *A*, *A*, figure 2, and then nail the hoops on to the staves securely. Saw the hoops through the line, *B*, *B*, and each part, when provided with a bottom, *C*, and cleats, *D*, *D*, to keep it in place, makes a substantial waterproof nest that can be fastened to a post or the side of a building. The nest complete, is shown in figure 3, and is attached to the base of a post.



2.—CUTTING THE BARREL.

Barn-Yards.—For good reasons the barn-yard is one of the most important features of a farm, and its proper keeping should be constantly in

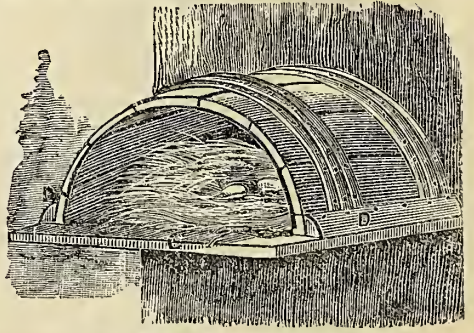


Fig. 3.—THE COMPLETE NEST.

mind. The manure here saved or lost, in a great measure, determines the success or failure of all other farm operations. The chief points to be observed are cleanliness and healthfulness of the animals there confined, and the saving of all the ma-

nure that is produced by them. Both of these ends are accomplished by having enough bedding or litter to absorb all the moisture and cover the droppings. The yard should be so constructed that it is not washed by the dashing rains of summer, but being comparatively level the litter holds the excess of moisture. In this way a good supply of the best manure is made. The straw stacks that often stand by themselves in the open field should furnish the necessary litter for the barn-yard, instead of slowly rotting away where they stand.

A Barn-Door Holder.

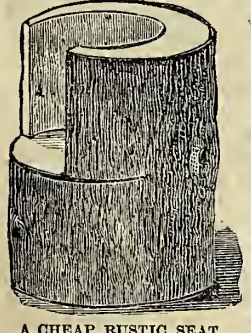
A simple apparatus for holding a swinging barn-door open at any point, was described to us in

A CHEAP BARN-DOOR HOLDER.

Livingston Co., N. Y. (We did not note down the name of the contriver—an aged farmer, who busies himself with making new deviees for ordinary work.) This is a stick, 2 to 3 feet long, with an iron ring or thimble around the lower end, to prevent splitting. A sharpened iron rod of any desired length is driven in. The other end is supplied with a hook to catch into a staple driven into the door. When not in use, it is turned horizontally, and the lower end rests on a spike or wooden pin, as shown by the dotted line in the engraved sketch. A similar stick on the other side could be used, if it is desired to hold the door only partly open, instead of swinging it back against the side of the barn, or against a stray post or other object.

A Rustic Seat, Quickly Made.

Among Mr. Judd's "Notes by the Way," we find a brief sketch of a Rustic Seat he saw on the shaded grass-plot around the residence at the farm of Wm. R. McNair, near Lima, Livingston Co., N. Y.—One end of a Linden (Basswood) log was found to be too knotty and otherwise unfit for sawing into boards. A piece 28 or 30 inches long was cut off with a cross-cut saw, for fuel. One of the daughters found a better use for it. First, at 15 inches from the lower end, the block was cut more than half through with a cross-cut saw. Then with an axe, and finally with a chisel, the seat portion was split and cut out, as shown in the sketch. All this was accomplished in half an hour or so during the nooning hour, by a couple of the farm hands. The saw-cut under the arms will not affect the solidity of the arms. This might be filled with a bit of putty, or a mixture of dry clay and oil, to keep out water and prevent future decay. A small gutter somewhere in the seat, to carry out rain when falling upon it, would be useful. Such seats as these, quickly made at no cost, may be quite freely provided for door yards, fruit yards, shady corners, etc.



A CHEAP RUSTIC SEAT.

The 17-Year Locust, or Cicada.—This destructive insect, which, in the same locality, makes its appearance every seventeenth year, is now exciting attention on a number of places in the United States. This brief description of the Locust is given in answer to the questions concerning it, sent to the *American Agriculturist*. The mature insect resembles the Harvest-fly, but its head is narrower, with red eyes and large wings the veins of which are orange red. The females are provided with powerful piercers, with which they make narrow grooves in the twigs and small branches of forest and fruit trees, aud in which they deposit about 20 eggs, arranged in a double row. After thus laying 400 to 500 eggs, the insect dies. It is this cutting into the branches that is the source of damage done by the Cicada, as it weakens the limbs, causing many of them to break away from the tree during storms, etc. The males only are provided with a tightly stretched membrane, like a drum, which when made to vibrate produces the sound that, when coming from a large number, suggests the rumbling or dull, obscure noise of a threshing machine in operation at a distance. The eggs hatch in about six weeks, and soon after the larvæ or grubs drop to the ground. The larva is white and by the aid of its lobster-like claws burrows at once into the earth, where they feed on the roots of plants, during their long unnoticed snbterrancan existence of 17 years. When its "time is up," so to speak, the grub comes near the surface of the soil, and remains for a number of days in the inactive pupa state; after a while, the perfeet insect comes forth through a rent in the back of the pupa-skin, and the circle of life of the Cicada is complete. A new deposit of eggs soon follows, branches are again destroyed, the dull drumming fills the land, and a second seventeen years of underground life is entered upon.

Wood and Cement Water Pipes.

Mr. "F. S.," Brooklyn, N. Y., sends sketehes and descriptions of cheap home-made water pipes

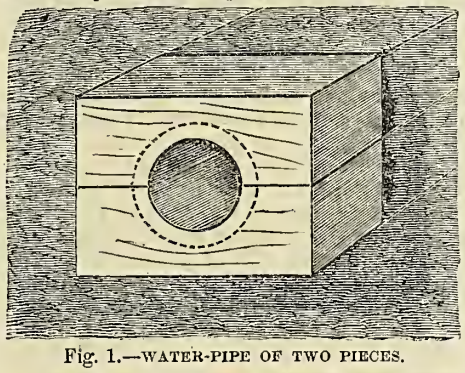


Fig. 1.—WATER-PIPE OF TWO PIECES.

to be enclosed in hydraulic cement. A wooden pipe is made of two strips of pine plank, 1½ inch thick by 4 inches in width; these arc hollowed out in the center by a molding machine and the two pieees joined together to make a tube, as shown in cross-section in figure 1. The strips should be

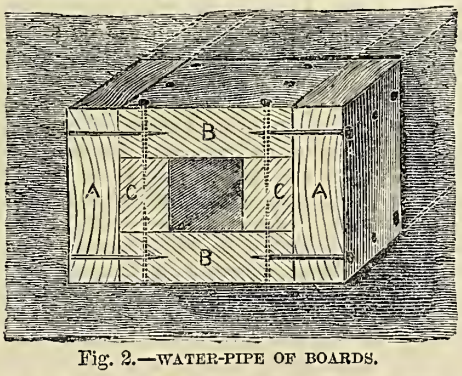


Fig. 2.—WATER-PIPE OF BOARDS.

about 12 feet in length, their ends are cut square, and they are put together joined end to end, by means of a ring of galvanized sheet iron—a ferule of such iron as stove pipes are made of. These ferules are three inches long; one of them is placed betweeu the ends of two sections of plank pipe, which are driven together, when the ring will have the position shown by the dotted ring in figure 1. In this way a secure water-tight joint is made. The two halves of the pipe are fastened together by screws placed six inches apart. The pipe is now ready for its encasement of cement, which should be made of one part cement, two parts clean sand, and two or three parts small gravel stones. The pipe should be laid below the frost line and after being placed in the ditch the concrete as it is prepared should be put around it.

Another kind of pipe is made of inch pine strips joined as shown in figure 2. First nail together the

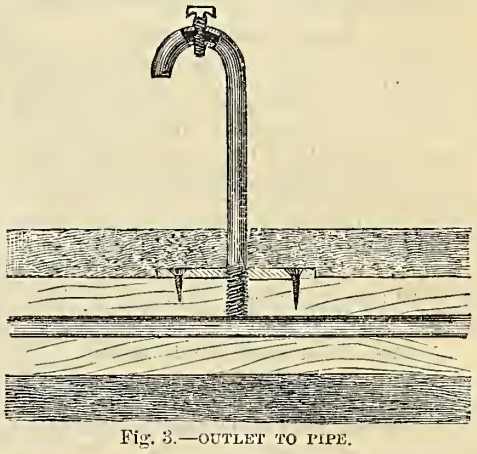


Fig. 3.—OUTLET TO PIPE.

strips *B*, *B*, and *C*, *C*, after which the boards *A*, *A*, are nailed on as shown in the figure. These strips give strength to the pipe; the nails, six inches apart, being long and passing well into the strips *B*, *B*. The pipe thus made which may have a "throat" 1½ to 2 inches in diameter is afterwards encased in the cement concrete, the same as pipe in figure 1. An outlet for the water from the pipe may be made as shown in figure 3. A piece of iron tubing of the length required, with a bend at the upper end is threaded at the bottom and made to screw into an iron plate, fig. 4, fastened upon the pipe at the point of outflow, below which a hole is bored through the side of the pipe; in fact the tube is screwed through both the iron plate and the wood of the pipe. An ordinary faucet may be made of the upper end of the iron tube.

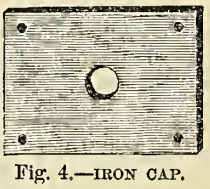


Fig. 4.—IRON CAP.

The Lettuce Mildew.—Early last spring the complaints from the loss of the crop for forced lettuce, were so frequent, that we were induced to send out a circular asking for further information upon this important matter. The results of this investigation were published in an illustrated article in the *American Agriculturist* for April last, p. 148. Since that time other answers have come in, and with them the information that the trouble is much more wide-spread thau we were led to infer from the replies up to the time of writing the April article. We there stated that: "From the responses to these questions, we infer that the Lettuce Disease is at present confined to the Atlantic States." Responses from the South, even so far as Southern Texas, inform us of its ravages in that direction, and a letter now before us states that the region of the Great Lakes has not escaped; in fact, the growers of early forced lettuce in Central Michigan, for example, have had, in some cases, their entire crop almost completely destroyed. There is no doubt that the disease is a fungus, and the important question is, how to meet it, or, better still, how to prevent its coming upon the early lettuce. With the closely related mildew upon the grape-vine, Flowers of Sulphur dusted on at intervals has been found an effectual remedy; but with the lettuce plant we are met by the difficulty that the foliage is the portion eaten, and the dusting of it with Sulphur would not improve its taste or healthfulness; in fact, without thorough washing, it would not be marketable. It appears evident that just those conditions that produce the most vigorous growth of the lettuce plant, namely: rich soil, heat, abundant moisture, etc., are those best for the fungus.

The Family Cow—How to Keep Her.

[THIRD PRIZE ESSAY.]

For several years I had been experimenting on a small scale in soiling cattle, my area of land, however, was exceedingly limited, being only a portion of the kitchen garden of a city residence, but my success was, even in this small way, so satisfactory, that I determined at some future day to try it on a more extensive scale. My reading and experience convinced me, that in our favored southern climate,

A Half Acre of Land,

intelligently cultivated, would produce a supply of food amply sufficient to support one cow throughout the year, and circumstances favoring, I determined to try the experiment. In April, 1876, I became owner of a lot 250 feet long by 120 wide in the rear of my premises—the greater portion having been used as a grass plot for a horse. I immediately began by fencing off a portion 120 feet by 200, running a wagon-way 8 feet wide down the center, which, with the space occupied by the stable (say 20 by 30 feet), left nearly 22,000 feet, or within a fraction of half an acre, for actual cultivation.

The Land was a Sandy Loam,

covered with a thick sod of Bermuda and other grasses. Years before it had been cultivated as a market garden, but latterly given up to grass; it sloped to the south sufficiently to favor good drainage. In and around the stable was a goodly lot of manure, which, during April, was spread upon the land—some 40 cart loads. On the 20th of April, the land was thoroughly plowed with a two-horse turning-plow, and harrowed until finely pulverized. On May 1st, I planted one half of this land in

Our Common Southern Field Corn,

in drills two feet apart, with the grains about one inch apart. The rows were lengthwise, to render after cultivation more convenient. On May 4th, sugar corn was put in one-half of the remainder, planting at the same distance as the larger variety. May 6th, the remaining fourth was sown heavily with German or "Golden" Millet, in drills 12 inches apart. Seasonable showers, followed by warm sunny days, soon produced a vigorous and rapid growth. On May 15th, a Thomas' harrow was run over the first planted corn, and six days after over the second planting, and over the millet. On May 30th, the corn was plowed, followed by a good hoeing. A fortnight later, a second and last hoeing was given. The millet was also hoed twice, after which the growth effectually shaded the ground, and thus prevented the growth of weeds. In the meantime I had repaired the stable, and had a large door cut into the side next to the original lot, and made

A Stall for our pet Jersey Cow.

The floor was made of cypress plank, 3 inches thick, and sloped very slightly from the manger. By actual measurement of the space occupied by the cow—giving just room for her hind feet to clear the same, a trough, eight inches deep, and fifteen wide, was made to receive the urine and droppings. The stall was 4½ feet wide, the sides coming only half the length of the cow, and just her hight. The manger extended entirely across the stall, was 12 inches wide at the bottom, and 18 at the top, and 12 deep, the bottom being 12 inches above the floor. The fastening consisted of a ⅝-iron rod, passing from one side of the stall to the other, along the center of the manger, and one inch from it. On this rod was a ring, to which was attached a short chain that ended in a snap-catch, to attach to a ring fastened to the head-stall,—the head-stall being made of good, broad leather. Usually, in turning the cow out in the morning, the head-stall was unbuckled and left in the stable; to fasten again was but a moment's work. By this arrangement the cow had full liberty to move her head, without any possibility of getting fastened by the halter. The bottom of this manger was made of slats, one half inch apart, so that no dirt could collect. For feeding wet messes, there was a box made to fit one end of the manger, which could be removed to be washed without trouble. With plenty of sawdust, costing only the hauling,

Perfect Comfort and Perfect Cleanliness

were matters of course. Attached to the stable, but on my original premises, was a lot 50 by 50 feet, where, during pleasant weather, the cow was turned, but free to go in and out of her stall at pleasure. In this lot was a trough, connected with the pump, where a supply of clean and fresh water was always kept. Daily this trough was emptied and thoroughly cleaned. A cow may eat dirty feed occasionally, but see to it that the water she drinks is pure. Unless this is attended to, her milk is unfit for human food. The manure trough being supplied with sawdust, the urine, as well as the droppings, were saved and removed daily to a covered shed located in one corner of the lot, where it was kept moist, and worked over occasionally. Our Jersey was due with her second calf about the 20th of June, but was still giving milk in April and May. Her feed from May 1st to the 15th of June, was the run of a common pasture, with a mess twice daily of wheat bran and corn meal, with hay. On the 1st of June she was dried up for a brief resting spell. On June 15th we began cutting the sugar corn, now waist high. This was run through a cutter (making cuts ¾ of an inch), and fed to her three times a day, first sprinkling two quarts of wheat bran over the corn, and continuing the hay feed twice a day. At the same time

She was taken from the Pasture,

not to go on again until this experiment was finished. On the 22d of June her udder was so distended, it was deemed prudent to relieve it by milking. This was done twice a day for three days. Here, at the South, there is a foolish prejudice against doing this, the belief being strong among the ignorant classes that it will cause the death of the coming calf. In some instances I have found it necessary to relieve the udder daily for a week before calving; I never knew any evil to result. On the morning of June 25th there was a fine heifer calf beside her. As soon as convenient the cow was milked thoroughly, and a bucket of water, with one quart each of corn meal and wheat bran stirred in, and a pinch of salt, was given her, and *nothing else* except water for 24 hours. At evening she was again milked to the last drop, and the calf left with her during the night. Next morning a small feed of three quarts of wheat bran, and one quart of corn meal, made pretty wet, was given her, and her udder again thoroughly emptied. After milking, a small feed of hay was given, and a pail of water placed near. The calf was separated from her, but within sight. At mid-day the calf was allowed to take her fill, and afterwards the udder stripped. At evening, as the cow seemed to be free from any indications of fever, or inflamed bag, she was given a full mess of corn meal, wheat bran, cotton-seed meal, and hay. Her calf took her supper, and the udder was again stripped; that night the calf was taken from her, never to suck again, as fresh milk in a city was too valuable to feed to even a registered Jersey. Having, in years past, lost several very fine cows from

Over-feeding and Under-milking,

at calving time, I cannot urge too strongly what Col. Geo. E. Waring calls "high starvation" at this critical period in a cow's life. If a cow has been decently cared for up to the day of calving, she needs nothing but rest, quiet, and a light mash,—warm in cold weather—for 24 hours, and then but light feeding for two or three days. But be sure to *empty her udder completely* at least twice every 24 hours, and if the cow is a deep milker, then three times; with this treatment, the feed can be gradually increased to all that she will eat up clean. It is a very easy thing to teach a calf to drink milk, when one has seen the thing done. Next morning this calf was impatient for her mess of warm milk, so, after milking her dam, I took a shallow pan, and putting two quarts of milk into it, proceeded to give the first lesson in a calf's life, of doing without a mother. The process is very simple, you merely wet the first and second fingers of the left hand with milk, and place them in the calf's mouth, to give her a taste of what is in store. Repeat this a few times, then gradually draw the pan nearer her mouth with your right hand, using your left as above. When the calf permits your two fingers to enter her mouth, raise the pan so that your left hand will be immersed, and the calf, by suction, will draw the milk up between the fingers. At mid-day, another mess of milk, and a second lesson was given; at evening a third. Next morning the process was repeated, but in this instance she did not need the fingers to guide her to what was good for her, she readily accepted the situation, and stuck her pretty nose into the warm milk, which rapidly disappeared to where it would do the most good. But with milk worth ten cents per quart, and cream seven times as much, it did not "pay" to use six quarts daily of rich Jersey milk in this way, so, after a fortnight's supply of the raw material,

The Feed was gradually Changed

to sweet skim milk for two weeks, and then substituting hay-tea, the milk ration was cut down to two quarts daily. Beginning with a tablespoonful of cotton-seed meal, thoroughly mixed with the feed, the quantity was increased in ten days to one pint daily. At one month old, she was gradually taught to eat bran by stirring it in her food.

The preparation of hay-tea is very simple. Nice hay was run through a cutter, and taking an ordinary two-gallon pailful, boiling water was poured upon it, then covered and allowed to steep for 10 or 12 hours. It makes a most excellent food, and calves thrive upon it. The most stylish and vigorous calf I ever saw, was raised upon hay-tea, with bran and cotton-seed meal as here described. I enter thus fully into the best manner of raising a calf without its mother, for the especial benefit of my southern readers, where the thriftless habit of allowing the calf to suck its dam, oftentimes until a year old, so generally prevails. In this instance the little heifer got along nicely until two months old, when an aggravated attack of scours set in, but by timely doses of laudanum in a mess of warm gruel, poured down her throat twice a day, for three days, a cure was effected. In ordinary cases of scours, a change to dry food will correct it, but it is well to watch and not permit the disease to become seated. A few years ago, a very valuable young Jersey heifer, received from the vicinity of Philadelphia, was taken in this way, while undergoing the usual course of acclimation incident to northern cattle brought south, and the simpler treatment proving of no effect, I gave injections twice a day of rice-water and laudanum, besides drenching her with corn-gruel and laudanum. This was kept up for ten days, but we carried her safely through, and her present value amply compensates for the time and trouble expended. But let us return to the cow. On the morning of June 29th, we began giving her

A Fair Feed of Green Corn,

adding to it wheat bran, and cotton-seed meal. On July 2d she was fed all the corn stalks she would eat, continuing to add bran and cotton meal, giving four quarts of the former and two of the latter, and this was her daily food, including the German Millet, treated in the same way, until September. The green food was given three times a day, but the bran and cotton meal added only morning and night. Occasionally a day's supply was cut early in the morning, and allowed to wilt before feeding, but in this, as well as in many other matters, my man-of-all-work did as circumstances permitted. His various duties about the place gave him but little time to reduce to an exact system the care and feed of a cow. She had a good stable, and got plenty to eat; received daily a good brushing, and was treated kindly. Yet, she was *our* servant (and a most faithful one she was), and we were not her's, or slaves to any arbitrary clock-work regularity. She was fed and milked at regular intervals, but beyond this it was not always convenient to have regular hours at her stable. We did not keep her as an exhibition of a model cow in a model stable, and to exemplify a model system of care and keep. Like thousands all over the land, we

Kept Her Simply for the Profit

she yielded, in the way of milk and butter. It has often struck me, in reading the many suggestions and hints about how to keep a cow, to be found in our agricultural and live-stock journals, that were they all literally carried into practical operation, it

would take the entire time of two able-bodied men to attend one animal—one to he always on hand during the day, the other to serve at night. *Now common sense is a good thing, even when applied to the management of cows, and my experience convinces me that the average man wishes to know only the cheapest and easiest way to have an abundant supply of rich, wholesome, and clean milk, and with pride enough in the possession of a good cow to furnish a good shelter and comfortable quarters. Beyond these, breeders of fancy and high-priced stock may go to any extreme, and find it a paying business in doing so, but the village or city owner of one or two cows, kept solely for his own use, can not afford to indulge in any of this "upper-tendom" style of cow life—it won't pay him.* As a row of corn was cut and fed, the land was plowed, manured, and more corn (common field) drilled in thick, so that the ground for the whole summer presented the appearance of an experimental corn field, with

Corn at Every Stage of its Growth.

This was kept up throughout the months of July, August, September, and October. Indeed, the half of this yield was more than sufficient for keeping the cow in superb condition, so that much the greater portion was cut in the tasselling stage and cured for winter feed. After September begins, it will not do to sow corn here; the worms destroy it, but in our southern Bean, known as the

"Cow Pea,"

we have one of the very best of soiling crops. Sown either broadcast, or in drills, it does equally well—makes a rapid growth, and affords a tempting and nutritious food for cattle. It grows until checked by frost, and I know of no plant, save Indian corn, that produces more weight to a given quantity of land. In this instance, we fed it daily during October and late into November, before a frost put an end to its use in its green form. Anticipating a frost, it was cut and cured for winter feed; and *properly cured*, no hay equals it for cattle.

November 24th our cow went into winter quarters, and for her winter feed there was over 4,800 pounds of well cured corn-fodder, and some 1,500 pounds of good pea-vine hay—far more than she could possibly consume.

Early in December, after spreading over the land all the manure on hand, it was plowed again, with a two-horse turning plow, and sowed thickly to oats, harrowing them in. A seasonable rain gave them a good start, so they went into winter quarters in a fine condition—a good stand and vigorous growth. The cow now received

A Daily Ration of Corn-Fodder

and pea-hay, run through the cutter, and after mixing thoroughly three quarts of wheat bran and one quart of cotton-seed meal, was wet with water (warm in cold weather). This was given her in the morning, and the same quantity at evening. The corn-fodder and pea-hay for a day's feed was 15 pounds of each, more or less. On this food she was kept throughout the winter, giving milk of excellent quality, and in good quantity.

In February, she was tethered every fair day in the oats; and in March, was fed a good mess of fresh cut oats, still, however, keeping up the winter feed of corn-fodder, pea-hay, wheat bran, and cotton meal. About the first of April, the green oats fed was increased to

All She would Eat,

feeding three times daily, and the excellence of this diet was shown by a marked increase in the quantity of her milk. Though due to calve again in July, she continued to supply a family of ten persons with an abundance of milk. Late in April, when the oats were in the milk state, they were cut and cured for hay, making a little over a ton of good food.

Upon summing up the result, the following dollars and cents view of the experiment of sustaining a cow on a half acre is submitted. The labor expended in cultivation is not put down as an item of expense, as the carriage horse was used in plowing, and the hired man did the rest.

	Dr.	
To 1,500 lbs. Wheat-Bran, at 90c.		$13 50
" 200 lbs. Cornmeal, at 70c.		1 40
" 800 lbs. Cotton-seed Meal, at $1.00		8 00
" 300 lbs. Hay, at 75c.		2 25
Total		$25 15
	Cr.	
By sale of 2,200 lbs. Corn-fodder, at 60c.		$13 20
" " 2,100 lbs. Oats, at 75c.		15 75
		$28 95
Profit		$3 80

But the profit above shown, *does not express the real profit.* A year's continuous supply of rich milk, in abundance, for a large household; cream for special occasions, and that best of luxuries, delicious home-made butter, and one hundred dollars for the little heifer when six months old, aggregates the chief results of the experiment.

For the best results in soiling, no crop compares, as far as my experience goes, with our Southern variety of Indian corn; on rich land it produces marvellously. I have raised it at the rate of over one hundred thousand pounds (or fifty tons) per acre. There is no difficulty in producing three crops in one season on the same land. But cattle need a variety of food in soiling, as in other forms of feeding. Oats are excellent, and come in early. Cat-tail Millet ("Pearl Millet") is a rapid grower, but cattle are not specially fond of it; they like German Millet better. Garden (or English) Peas make an excellent food; coming into use in March, and lasting to June. I remember one year I produced *five crops* for soiling, on the same land, in one year, namely: oats, three of corn, and one of cow-peas. The last named is a superb food late in the year, after corn has gone. I have never experimented with roots, nor am I aware of any being cultivated in the South as a soiling crop. Cabbages set out in September and October will be ready for feeding in December, and will, next to corn, produce the largest weight of green food. One year I fed them to a considerable extent, and found my cows were very partial to them. By beginning with cabbages in December, to be succeeded by oats in March, then peas, corn, and millet, to wind up in November with the cow-pea, a cow in our climate can be soiled every day in the year. "MOBILE."

GEO. G. DUFFEE, *Mobile, Ala.*

Whiffletrees, Doubletrees, and Draught.

It is not always desirable to have both horses of a team work equally hard, but when it has been decided what portion each shall do, the whiffletrees, and other means of attachment, should be so adjusted that the prescribed work shall be constant, with no opportunity for either horse to shirk his part. In order to secure this uniformity in the division of the work, no matter what the position of the doubletree, or "evener" may be, *the draught*

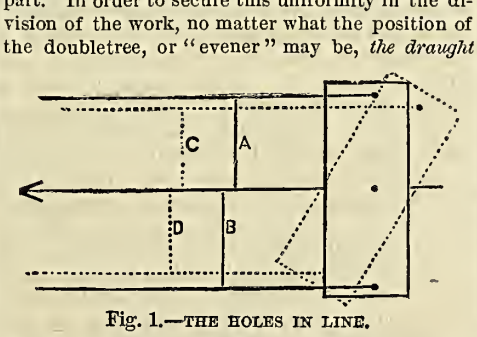


Fig. 1.—THE HOLES IN LINE.

pins must all be in the same line. This principle is best shown by diagrams, in which the doubletrees are unusually broad. Figure 1 shows a doubletree, in which the holes for the whiffletree, and that for the main draught pin, are in line. The direction of the draught is shown by the arrow. If the whiffletree holes are equidistant from the draught pin, it is evident that the two horses will have equal work to do, when the doubletree is at right angles to the line of draught. This equality is shown by the lines *A* and *B*, which are of the same length. When the doubletree is not at right angles to the line of draught—see dotted lines in the diagram—the whiffletree pins will still be equidistant from the draught pin. What one whiffletree loses in distance in moving forward of the main pin, the other loses in moving backward. The lines *C*, and *D*, measuring the vertical distance of the whiffletree from the main pin, are seen to be equal. With this form, the horse that keeps ahead of his mate, neither gains nor loses anything—the position of the pins, when all in a row, does not permit of an advantage. For the sake of securing the greatest strength for the amount of timber used, the doubletree is usually made with the main draught pin near the front edge, and the whiffletree pins near the rear edge of the "evener." The working of such a doubletree, is shown in fig. 2. It is evident, that so long as the doubletree is at right angles to the

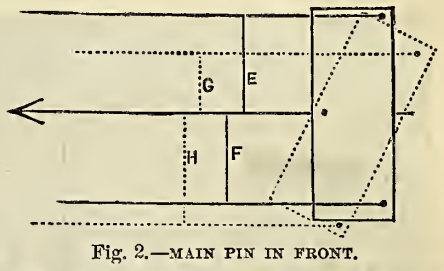


Fig. 2.—MAIN PIN IN FRONT.

line of draught, there is no advantage for either horse; but the moment one end of the doubletree is swung forward, the equality is destroyed. Thus the lines *E*, and *F*, which represent the proportions of draught, are equal. Not so with *G*, and *H*; the rear whiffletree pin being much nearer the center of the draught than the forward one. In this arrangement, the horse that keeps ahead of its

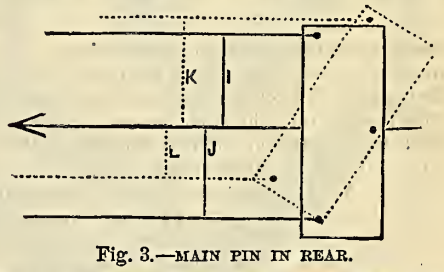


Fig. 3.—MAIN PIN IN REAR.

mate, may not do more than a third of the whole work, and yet the distance from the main draught pin, to each whiffletree pin, is the same. With this form of doubletree, the amount which each animal has to do varies with every change in the position of the doubletree, and this is a source of annoyance to animals of high temper, if not of more serious difficulties. The effect of putting the main draught pin near the rear edge, and the whiffletree pins near the front, is shown in fig. 3. With the pins equidistant from the main pin, and the doubletree at right angles, each horse does the same amount of work, but not otherwise.

Let the doubletree take the position shown in dotted lines, and the perpendicular distance from the two whiffletree pins is widely different, as shown by the lines *K*, and *L*, which also represent in inverse order the amount of work each animal must do to keep the doubletree in its present position. The nearer the line of draught of one of the horses comes to the line of draught of both (the heavy line with arrow), the more that horse is obliged to draw. In this case, the farther ahead the horse gets the greater is the load thrown on him, and the laggard has a comparatively easy time. When it is desirable to give one horse the advantage, that can be done by moving its whiffletree pin out, or that of his mate's in towards the line of draught; but it is not best to have the three draught pins out of line that the horse may get and keep an advantage when he does not deserve it.

Selecting Seed Corn.—It is as important to make a good selection of the seed that is to produce the next crop, as it is to choose the live stock that will grow the future herd. The selection should not be left until the time of husking, but be done now. Go through a portion of the field and select those stalks that are well eared and unusually vigorous—in fact, the best the field affords—and give them an extra chance for further development by removing the other stalks from the hill. Anything that will increase the vitality and perfect the development of the grain that is to be planted for the next season's crop, should not be

forgotten. We would seek for stalks with one good ear, rather than those with two small ones.

A Milk Sink or Cooler.

Mr. "W. H. B.," Cecil Co., Md., sends a description of a home-made "Milk Sink," as he calls it, which he holds as superior to any other he has seen. As it is not to be secured by a pateut, we present it to our readers. A brick box is built 6 feet long, 8 feet wide, 24 inches high inside, and the walls the length of one brick (8¼ inches) in thickness. There are pieces of wood the size of the bricks placed in the top layer of bricks, in the four corners and in the middle of each side, for the purpose of fastening a wooden capping, thus making the walls secure. The "box" thus constructed is shown in figure 1. A lid is then made of thin boards, and fastened on one side by stout leather hinges, with a handle on the middle of the front side to raise it by. See figure 2. It is necessary to state that the brick-work is laid up in hydraulic cement, and to insure from any danger from leakage, two coats of cement are put on the inside of the Sink. Two

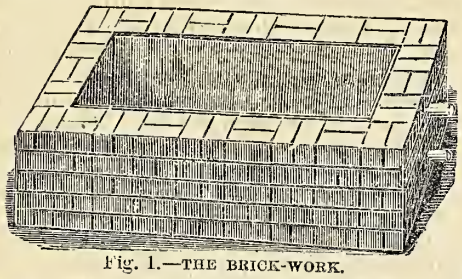


Fig. 1.—THE BRICK-WORK.

small outlet pipes are put in one end of the Sink, one near the bottom and the other near the top. They may be of iron 1¼ inch in diameter, and are closed by simple plugs at the outer ends. It would be well in the construction of the Sink to have one end a little higher than the other, that the water may all flow out the lower pipe when desired. The cans that Mr. B. uses are made of "3x" tin, 18 inches deep and 8¼ in diameter, holding 20 quarts. Two strips of thin iron are soldered across each

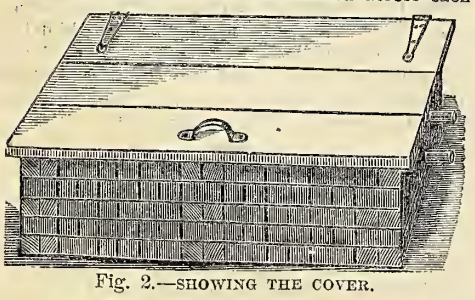
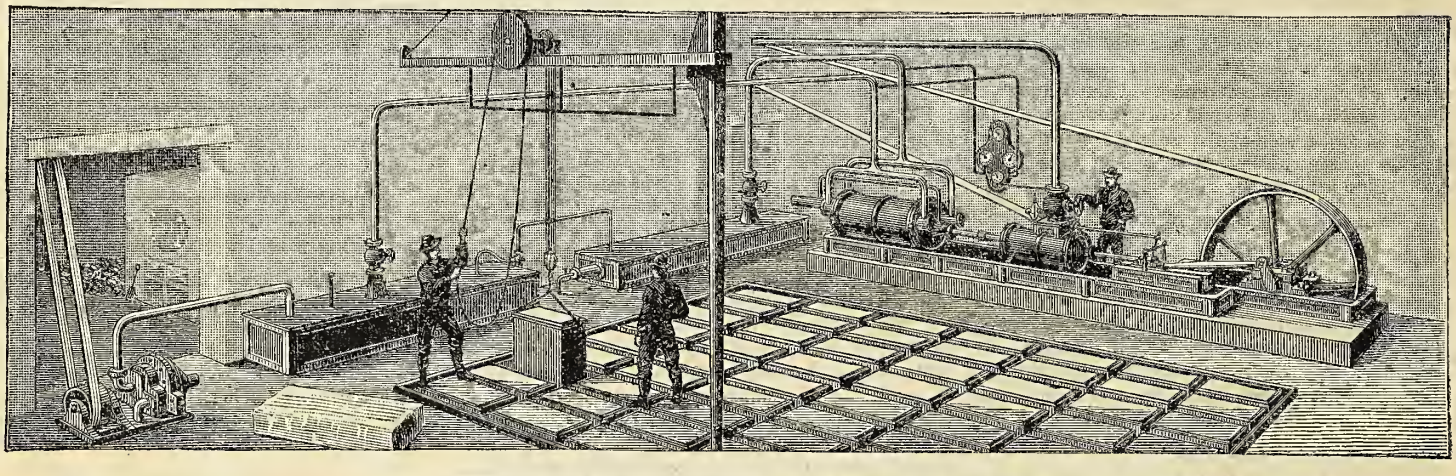


Fig. 2.—SHOWING THE COVER.

other on the bottom of the cans, to keep them from wearing out; they are provided with covers, and bails to lift them by. When all is ready, fill the Sink with water until the cans will nearly float. If possible have the Sink near the pump, or so that the water may be conveyed in a pipe. Mr. B.'s arrangement is something like that shown in figure 3. The lid of the sink should not be put down tight until the new milk is perfectly cold. A large button fastened on the edge of the wooden cap will serve to keep the cover up sufficiently to allow the air to circulate freely. When the milk is cold the cover is closed, and the Sink is left to itself until it is time for skimming or putting in new milk. The Sink described is large enough for 15 to 20 cows. With a large dairy it might be an improvement to have a partition about one-third of the way from one end for new milk, as the cans containing it should have more room than those containing cold milk. "When straining the new milk into the cans always do it outside of the Sink, as there is otherwise more or less spilling or spattering into the water, and in warm weather it might cause the Sink to become sour and smell. Cleanliness is about half the battle in first-class butter-making."



AN ARTIFICIAL ICE MACHINE—PORTION OF ROOM SHOWING THE PROCESS.

Artificial Ice and How it is Made.

When the temperature of water falls to 32 degrees Farenheit, or zero Centigrade, it passes into the solid state—in other words, it freezes and becomes ice. In most parts of the earth, this formation of ice takes place naturally to a greater or less extent. During nearly half of the year, ice is one of the most common objects in the temperate regions of the earth. Ice, formerly regarded as a luxury in warm weather, has so many economic uses, that it has become a necessity, and the capital invested in collecting and preserving it, could we know its amount, would be immense. The question of producing ice artificially at any time, and in places most needing it, is a most important one. The working of the various ice machines, depends upon a well known principle in physics, namely; When a body changes its state, *i. e.*, a solid becomes a liquid, or a liquid becomes a gas, heat is taken up, and consequently cold is produced. This principle is illustrated in various ways. If we cause ice to melt by placing salt with it, there is a great absorption of heat, or a production of intense cold. A certain amount of heat is necessary for the existence of water as a liquid; when we would convert it into a solid again, we abstract that heat. The amount of heat disappearing in these changes is said to be *latent*, or hidden in the liquids. So in the change from a liquid to a gaseous state, or a state of vapor, heat is similarly taken up. This is nicely illustrated in the pouring of a little ether upon the hand—as it volatilizes, heat is absorbed from the hand aud a sensation of cold is experienced. There are a number of liquids that, like ether, are very volatile, that is, pass readily into the form of vapor—such as Ammonia, Sulphurous Oxide, Ethylo-Sulphurous Dioxide, etc., all of which are now more or less used in the artificial production of ice. In the various processes one of these very volatile liquids is made to take on the gaseous state; to do this it must have heat from some source, and it is so arranged that water shall supply this needed heat, and in so doing it becomes solid, or ice. The details of the method vary, depending upon the liquid used, but the construction of the apparatus is essentially as shown in the accompanying engraving. The excavation in the center of the room is the freezing tank which contains an uncongealing bath. Molds are placed into this bath which contain the water to be frozen. The bath is cooled to a low temperature, by means of the volatizing liquid, which is caused to vaporize within tubes that pass through the bath. The vaporization is greatly increased by having the air partially exhausted from the pipes; in other words, there is a partial vacuum in which the vapor is rapidly formed. The latent heat of vaporization being constantly taken up from the non-freezing bath, reduces its temperature; that in turn absorbs heat from the molds containing the water to be frozen. The vaporizing liquid is kept in constant motion—being used over and over again—by means of an exhaust and compression cylinder in connection with a steam engine, shown in the rear of the room. The non-freezing bath is also kept in motion by the engine. When the water is frozen, the mold containing the ice thus formed is raised from the bath by means of a crane and pulleys, as shown in the engraving, and the ice removed, when the mold is again filled with water.

The same kind of apparatus is now used to some extent, for cooling rooms in which fruits, vegetables, meats, and other perishable articles are stored. Instead of having a large bath tank for

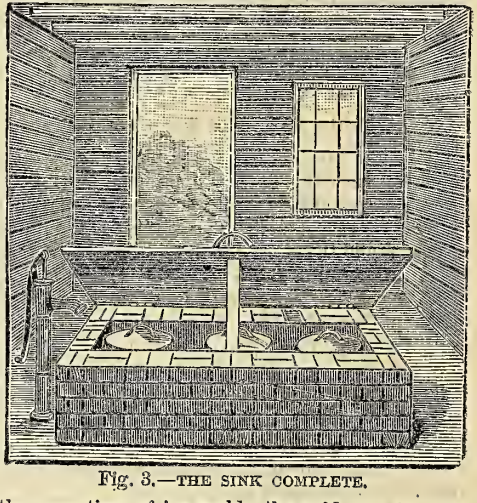


Fig. 3.—THE SINK COMPLETE.

the reception of ice molds, the cold, non-freezing liquid is forced through long tubes in the cooling room, and in this way the storehouse is cooled.

The practicability of the artificial production of ice is demonstrated beyond a doubt, and it may be well for those farmers, etc., who are so located that a supply of natural ice is not at hand, to look into the matter of ice machines. The machines are made of very many sizes to suit the trade, ranging all the way from a capacity of a hundred pounds to several tons of ice per day. A number of farmers might combine and a single small machine would furnish them all with the ice needed, and could at the same time be used to cool a store room for the keeping of fruits, meats, and vegetables.

We are indebted to the New York Ice Machine Co. for the engraving herewith presented.

The Houseleek—Umbilicus.

Among the plants well suited to grow upon rock-work, are the Houseleek and other closely related plants. Those who are fond of odd forms of vegetation, by planting a rock-work exclusively with the various species of *Sempervivum* or Houseleek, some of the *Sedums*, or Stone-crops, and others of the same family, can produce a most grotesque effect. The hardy species of these plants, and there are a great many of them, when once planted require but little care. They are scarcely affected by drouth, and when once well established, they take such full possession of the ground, and cover it so closely, that little else can get a foothold. The *Sempervivums* present a general resemblance in form, to that of a rosette, but vary in size, the shape of the individual leaves, and especially in color. Some bloom quite freely, but their flowers are generally of a dull pink or pale purple, and are not especially showy. Knowing this to be the general character of the flowers, we were surprised to see on a rock-work devoted to such plants in the grounds of Messrs. Woolson & Co., a patch of bright crimson, or almost scarlet. An examination showed that the plant was not a true *Sempervivum*, but a hardy near relative, of which we had seen accounts in European journals, a species of what the European Catalogues call *Umbilicus*, or Navel-wort. This one, from its close resemblance to the Houseleeks, is called *U. sempervivum*, the "Houseleek Navel-wort."

Modern botanists do not recognize the genus *Umbilicus*, but unite that and *Echeveria*, with *Cotyledon*. This is not the place to discuss such matters, and we can not explain further than to say that the best botanists find that the plants originally called *Echeveria* and *Umbilicus* are so much like those called *Cotyledon*, that they see no good reason for three different names, and they place them all under the oldest name, *Cotyledon*. Florists are generally slow to adopt such changes, and are apt to continue to call a plant by the name they first knew for it. Until there can be a better agreement between botanists and florists, and other cultivators, we must submit to the inconvenience of having one set of names for botanical works, and another for the garden and garden works. To come to the plant in question, and as we speak of it as a garden plant, we give it its garden name, *Umbilicus sempervivum*, comes from the Eastern Caucasus. It makes small rosettes of very pale leaves, not much over an inch across. The second year they throw up the flower stem, when the plant appears as in the engraving, which is of the natural size. There are several other species, some of which have white, and others yellow flowers; the present species especially interests us as giving a positive and rich color among plants, which, though striking in foliage, are not usually very brilliant in their flowers.

THE HOUSELEEK (*Umbilicus sempervivum*).

KRAMER'S LILY (*Lilium Krameri*).

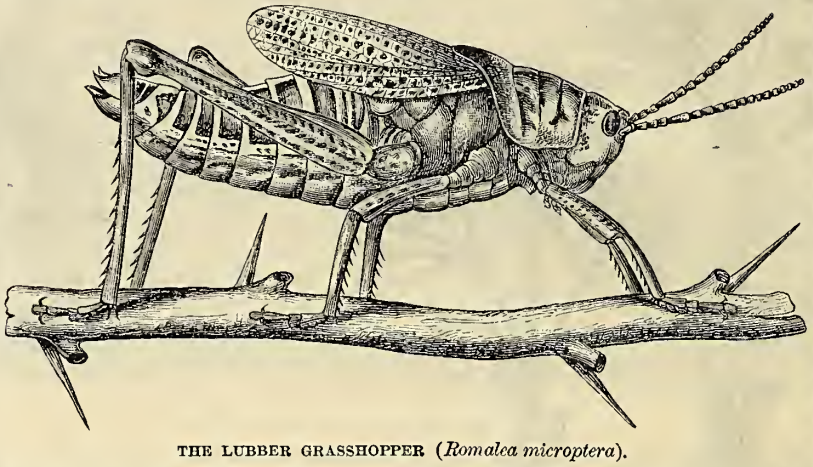
Some Notes on Lily Culture—Kramer's Lily.

One need not be very old to recollect the time when the old White Lily, the Tiger Lily, and the Martagon or "Turk's Cap," were all the lilies to be seen in ordinary gardens. Now the species and varieties are so numerous that it would require a large bed to contain but a single specimen or two of each. While in purity of its whiteness, in fragrance, and the grace of its typical lily form, the old white lily has not been, to our notion, surpassed, entirely new types have been introduced, and we now have a great variety in form and a wonderful range of color, including some of the most brilliant and some of the most delicate tints known among flowers. The great improvement in Lily-culture during the last 30 years or so is due to several causes, prominent among which is the opening of Japan to commerce. Not only were the native species of Japan introduced into our gardens, but it was found that Lilies had long been favorites with the Japanese gardeners, who by careful hybridizing and crossing had produced garden forms of great beauty. In looking for the causes for the advance in Lily-culture, the efforts of our own cultivators in crossing and hybridizing must not be omitted; the splendid results obtained by Hovey, Wilder, Parkmann, Hanson, and others, as well as those by European cultivators, show what a promising field is still open to the patient florist. The introduction into cultivation of our native species from both sides of the continent, has added new forms and color; indeed, those who have not made the experiment have no idea of the great variety in form and, within a certain range, of color, the common species of our swamps can present when transferred, as they well deserve to be, to the more favorable conditions of the garden. As with other plants, new introductions among lilies are for a while costly, but the majority, including the most beautiful, are sold so low as to place them within reach of all who can buy flowers at all. Their moderate cost is due to the fact that most of the species can be readily multiplied from the bulb-scales. Each of the scales of which the bulb is composed, will, under favorable conditions, form a bulb, and sometimes two or more. This method, now no longer a florist's secret, will allow any one to multiply these beautiful plants, as it requires not so much skill as patience. One has only to carefully pull off the scales, and a few of the outer ones can be taken without injury to the bulb, set them out, just covering them in boxes of light sandy earth, and keep them at a uniform temperature of about 50° or 60°. The earth is to be kept barely moist, not wet, and in about six or eight weeks minute bulbs will be formed at the base of each scale. All the lilies, except perhaps a few from the mountains of India, are hardy, and many that were formerly considered tender are now

known to have suffered, not from cold, but from a long continued high temperature. Some of our cultivators, following the English method, planted the tall-growing kinds, such as *L. auratum*, in their beds of rhododendrons. This was done for effect, merely, as it gave the lily-flowers the rich dark-green of the rhododendrons as a background the better to show off their colors, and it added to the attractiveness of the rhododendron plantations by clothing them a second time with flowers, as the lilies do not bloom until long after the shrubs have finished their display. Some of our friends who planted their lily-bulbs in this manner found a marked improvement; the flowers showing an increase in size and numbers. One who had never been able to get but one bloom from *L. auratum* when in an ordinary border, the bulbs either breaking up into numerous small ones, or dying out altogether, a trouble ascribed to the severity of the winter, accidentally left out the bulbs that were among the shrubs, and instead of losing them, as he expected, found the second summer's bloom much finer than the first. These experiences in different localities led to the discovery that our failure to secure results with lilies at all approaching those of the English gardeners, who make nothing of 50 or more flowers on the stem of a *L. auratum*, was not due to our more severe winters, but to the long continued heat of summer. The shade of the rhododendrons kept the soil cool and moist, and gave the bulbs just the most favorable conditions for their growth. Planting the tall lilies among deciduous shrubs can be practised by those who have no rhododendron beds. Where the lilies are grown in open beds, we have no doubt a light mulch, preferably of leaves, would be of great benefit to all the species. Among the lilies that flowered very satisfactorily with us this season is one known as Kramer's Lily, *Lilium Krameri*. This is of special interest, as it is supposed to be one of the hybrids of the Japanese gardeners, and it is thought that *L. longiflorum* and *L. auratum* are its parents. This, which the engraving shows of about half the real size, has the general habit of *L. longiflorum*, but is of a delicate rose-color within, and has a fragrance similar to, but less oppressive, than that of *L. auratum*, and is one of the best of its class.

The Lubber Grasshopper.

A tin box came by mail with no mark as to its contents, and no letter referring to it, had been received. In such cases great caution is required in opening the package, as one has to be prepared for whatever may present itself. Slowly raising the cover there appeared the drollest, most knowing looking face!—much too small for that of a quadruped, and it seemed too large for that of an insect. Further examination showed it to be an insect—and a good deal of an insect when we consider that there were three inches of it! A letter received the next day from L. Phelps, Orange Co., Florida, explained that he had sent a troublesome grasshopper to find out what it was. Having the good fortune to possess a set of Prof. Townend Glover's beautiful illustrations of the *Orthoptera*, we found that he had given the portrait of the insect and we here reproduce it. The engraving is rather below the size of our largest specimen, the body of which measured quite 3 inches in length, while its "hoppers," as boys call the hind legs, are at least 3½ inches long. The body, legs, and head, are yellowish, barred and spotted with black; the wing covers, which are thought by many to be the wings, in addition to yellow and black, have a handsome shading of rose-color. The portrait, in profile, fails to show the full face, which had such an intelligent expression that it did not seem altogether right to drown the creature in alcohol in order to preserve it. The eggs are laid in the ground, and the larvæ, as is the case with other grasshoppers, are much like the perfect insect in shape and movements, but are without wings, and are black with orange-red markings. Though the perfect insect has wings they are too small to be of use; it can not fly, and as it is very sluggish in crawling and clumsy in jumping, it has received the name of "Lubber Grasshopper." Its scientific name is *Romalea microptera*—the Small-winged Romalea. The "Lubber" feeds upon foliage of various kinds, but shows a preference for the leaves of the Orange-tree, as Mr. P. writes: "especially the tender ones, and the buds that I have put in, and are my pride." The insects have long been known along the Gulf Coast, as far west as Louisiana, as destructive to garden vegetables of various kinds, and they are said also to eat the fruit of the peach and fig. However moderate their other movements, they are not slow in eating, and in all stages of their existence devour orange leaves most voraciously. As they are obliged to



THE LUBBER GRASSHOPPER (*Romalea microptera*).

crawl up the trees, it would not be difficult to arrange some barrier to their ascent. They are quite too much for domestic fowls, which refuse them. Being, even when young, slow to get out of the way, they are readily crushed under foot or caught in a net. As their destructive powers increase with their growth, they should be proceeded against when quite young; when they first make their appearance they are less than an inch long, and being so much blacker than the mature insect, may not be recognized as the same. They might be readily disposed of by the use of Paris Green or London Purple upon their food. We would suggest as more economical than poisoning the trees, to place leafy branches of the wild orange, or those that can be spared from cultivated trees, in pails or other vessels of water, to keep them fresh, and apply the poison to the leaves of these. The lazy insects would no doubt gather on these traps, as they would be saved the trouble of climbing for food.

Fruit Dryers and Fruit Drying.

The great superiority of fruit dried by artificial heat, over that prepared in the sun, has turned the attention of many to the subject. So superior is the artificially dried fruit that in the market it bears as a trade name "Evaporated Fruit," to distinguish it from the common article, while the price at which it sells is so much higher that it may properly excite the interest of fruit growers. In October last we gave an account of the "Zimmerman," one of the modern dryers and our experience with it, but there are many who wish to operate upon a larger scale than is possible with a portable dryer, and several of these have written asking us to give a plan for constructing a large dryer. While we would willingly aid our correspondents, we are here met at the outset by the fact, that the various Dryers and Evaporators, large and small, are patented, and it would hardly be possible for us to suggest a contrivance for drying without unconsciously interfering with some one of half a dozen patents—especially as we do not know what each claims as his particular invention. Any fruit dryer must consist of a source of heat, and something to hold the fruit while it is drying. The mere drying of fruit by artificial heat, we suppose, cannot be patented; could it be, every woman who dries her sweet corn and pumpkin in the stove oven, with the door open, would be an infringer. Any improved or origiual methods of constructing these essential parts, is very properly patentable, and whoever would put up an apparatus for dryiug, must avoid interference with these patents. Some patents are trivial, they do not cover inventions, but are for things that have long been in common use, and never should have been granted; and notwithstanding that such patents exist they are nuisances. We believe in patents, and are sure that our patent system, imperfect as it is, and as strangely administered as it sometimes seems to be, has vastly promoted the prosperity of the country. If there is any feature about it that we do not like, so long as it is the law, all good citizens will observe it. While we would do all in our power to aid one in resisting a false claim in regard to a patent, we would not knowingly aid one in interfering with a regularly secured patent, however absurd the granting of it may seem. So in the matter of fruit dryers, while we would gladly aid those who wish to do so, to construct them, we should do wrong were we to give a plan that trespassed upon the rights of others. The best we can do is to describe an unpatented arrangement, which includes all the essentials of a successful dryer. The first device for artificial drying we ever examined, was used in the preparation of vegetables in immense quantities for the army during the war. Enclosures or rooms of convenient size were made of frame work, and the sides covered with cotton cloth. The diagram giving an end section of one of these drying rooms will show the arrangement. At *a*, *a*, are steam pipes, the source of heat; these ran around three sides of the enclosure, near the bottom; slats *b*, *b*, were fastened across at intervals, to hold the trays, *c*, *c*, which were simple frames with a bottom of mosquito netting or other open fabric. The frames were alternately close against the side of the enclosure so that the hot air would take the course shown by the arrows. The cabbages, carrots, etc., sliced thin, and spread on the trays, were rapidly and perfectly dried. The whole was a temporary arrangement, put up in some vacant loft, but the product could not have been better had the most expensive apparatus been employed. This illustrates the general principle upon which all dryers are constructed; there is a source of heat in the steam pipes, and trays to hold the fruit or whatever is to be dried, and an arrangement by which the hot air is caused to circulate among the trays in the most complete manner. There was of course an opening for letting in an abundant supply of fresh air below, and another for the exit of the hot and moist air above. Whatever else there may be about a dryer, these conditions must be met. This description of an unpatented arrangement may be of service to those who wish to experiment in the matter. If a stove is used to supply the heat, of course a room inclosed by cotton cloth is out of the question. A word of caution is necessary here: wood work of any kind long exposed to a temperature much below that at which it is charred, becomes after a while exceedingly combustible, and will take fire with the greatest ease. Hence danger from fire is always present

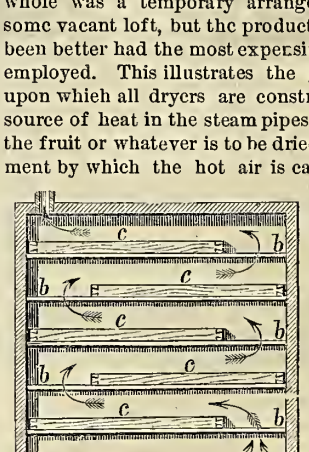


DIAGRAM OF DRYING ROOM.

and is to be guarded against. In some of the large patented dryers the trays are suspended upon endless chains, which pass over wheels above and below; the trays of fresh fruit are put in nearest the furnace and gradually raised as others are ready to go in below them. Those who propose to dry fruit on a large scale will very likely find it cheaper in the end to arrange for the construction of one that has been thoroughly tested, even though it is patented. The sum paid the patentee for the right to construct, according to his plans, may easily be less than an inexperienced person would expend in experiments and alterations, and after all, he runs the risk of making use of some device that has been patented, and may at the end have to pay more for it than it would have cost at first. It would be well for all who propose to dry fruit largely to look into the capacity of the largest Zimmerman, as well as examine the stationary apparatus.

The Tortoise Beetles.

Mr. P. Frenzeny, Bergen Co., N. J., recently left with us specimens of an insect found upon his potato vines. Since the advent of the *Doryphora*, which is by common consent known as *the* Potato Bug, we hear much less than formerly of the dozen other insects, known to live upon the potato plant. The insect left by Mr. Frenzeny, is one of the Tortoise Beetles, and though recognized as an enemy to the potato, has never been sufficiently numerous to cause much injury. As a representative of a group of insects, some of which are quite destructive of other plants, especially the Sweet Potato, and the larvæ of which have some marked peculiarities, we reproduce its portrait from Prof. Riley's Second Report on the Insects of Missouri, and some figures of the larvæ of related species. The insect is known as the Clubbed Tortoise Beetle, *Deloyala clavata*. The engraving is almost twice the real size. The broad, yellowish, transparent wing-covers, extend for some distance on each side, and at the rear, beyond the body of the insect, and in front there is a similar helmet-like projection beyond the head. The resemblance to a tortoise is still further increased by the dark opaque markings, which, extending to the edges of the shell, look much like the paws of a turtle. At the time this Report was made, the larva of this particular species was not known, it being the perfect insect that feeds upon the potato. But there are several other Tortoise Beetles, belonging to the closely related genus *Cassida*, of which the history is well known, and it is likely that the larva of this one, will be found to have similar habits. Fig. 2 shows the larva of one of these, the Mottled Tortoise Beetle, a well known enemy to the Sweet Potato in the Southern States. This has a forked tail, and uses it to spread a sort of screen or parasol, apparently to protect it from the sun. This shield consists of the dried dung of the insect, often mixed with its cast off skins. In some, this parasol is irregularly three-lobed in shape, but in this it is in broad masses with branches, as in fig. 3, which shows a similar larva as looked down upon. As the excrement is thoroughly dry, there is nothing offensive about it, and its real nature might not be suspected at first sight. In marked contrast with what we can not help regarding as an unpleasant habit of its larva, is the great beauty of the perfect insect of one of the species, the Golden Tortoise Beetle, which Riley describes as "one of the most beautiful objects that can be imagined. It exactly resembles a piece of golden tinsel."

Fig. 1.

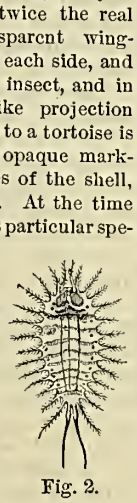


Fig. 2.

Fig. 3.

These species of Cassida are found on the wild Morning Glory, and also on the Sweet Potato vine.

Teosinte for Warm Climates.

BY PROF. ASA GRAY.

When the *American Agriculturist* first figured and brought to notice the gigantic grass known as Teosinte, as a forage plant, it was careful to state that it required so long a season that it promised to be of value only in the Southern States. As we have been the means of sending seeds to subscribers in several of the warmer states, this spring, we hope to have reports of its behavior this fall. Prof. Asa Gray has gleaned some items as to its value in other countries which have an interest here. He writes:

The Director of the Botanic Garden and Government Plantations at Adelaide, S. Australia, reports favorably of this strong-growing, corn-like forage plant, the *Euchlæna luxurians;* that the prevailing dryness did not injure the plants, which preserved their healthy green, while the blades of the other grasses suffered materially. The habit of throwing out young shoots is remarkable, 60 or 80 rising to a hight of 5 or 6 feet. Farther north, at Palmerston, in the course of 5 or 6 months, the plants reached the hight of 12 to 14 feet, and the stems on one plant numbered 56. The plants, after mowing down, grew again several feet in a few days. The cattle delight in it in a fresh state; also when dry. Undoubtedly there is not a more prolific forage-plant known; but, as it is essentially tropical in its habits, this luxuriant growth is found only in tropical and subtropical climates. The chief drawback to its culture with us will be that the ripening of the seed-crop will be problematical, as early frosts will kill the plant. To make the Teosinte a most useful plant in Texas and along our whole south-western border, the one thing needful is to develop early-flowering varieties, so as to get seed before frost. And this could be done without doubt, if some one in Southern Texas or Florida would set about it. What it has taken ages to do in the case of Indian corn, in an unconscious way, might be mainly done in a human lifetime by rightly-directed care and vigorous selection. Who is the man who is going to make millions of blades of grass grow where none of any account ever grew before?

Melilots as Weeds.

It now and then happens that a plant heretofore regarded as harmless, finds a locality specially favorable to its development, becomes aggressive, growing where it is not wanted and is recognized as a weed. Singularly enough two species of the same genus, *Melilotus*, have come to us this year from widely separated localities—Maryland and Texas—to ascertain their names, and both represented as unwelcome intruders. There are two species of Melilot common in the older States, a white and a yellow flowered. Both are coarse branching plants 2 to 4 feet high, or even taller. The leaves are shaped like those of clover, rather smaller, and the divisions toothed; the flowers, which are minute pea-shaped are in little racemes, which go on lengthening and blooming, so that while there are buds and flowers above, the little one- or two-seeded pods at the bottom of the cluster will be full grown if not ripe. The engraving of the top of a branch of about the natural size will allow it to be identified if met with. The White Melilot, *M. albus*, is the one-figured, and the one brought from Maryland; the yellow, (*M. officinalis*) besides the different color of its flowers, has somewhat differently shaped leaves, there are other species, and all have the peculiar odor that is so marked in the Sweet-scented Vernal-grass, the Seneca grass, and especially the Tonqua Bean. The White Melilot, known as Sweet Clover, and sometimes as Bokara Clover, is sometimes cultivated by those who are fond of its perfume. It was formerly cultivated in England, not so much as a fodder crop, as cattle will not eat it when fresh, but to mix with poor hay in order to perfume it. In Europe this or a related species is bruised and mixed with the curd to flavor it in making Gruyère cheese. This is all that can be said in favor of the plant; it is often found as a straggler along road sides and in waste places, but not in a manner to arrest attention. Last June, Mr. T. Davids, who has a farm near Annapolis, Md., brought us a remarkably vigorous specimen, which reached as high as one's head, and branched from the very base. This, according to Mr. Davids, is spreading with great rapidity, making inroads upon the grass lands, appearing in the wheat fields, and threatens to be a serious pest. In case of the Texan plant, a specimen was sent by a correspondent of a plant that had suddenly appeared in his "bottom lands," as the alluvial banks of rivers are called in all the Western States, the term being the equivalent of *intervale* as used in New England. The plant proved to be still another species, the Small-flowered Melilot, *Melilotus parsiflora*, of Continental Europe, and no doubt introduced by the early Spanish settlers, as it extends from Louisiana and Texas across through Mexico to California. We have seen it occupying acres along rivers to the exclusion of everything else, but even hungry mules would not eat it. It is not so robust a plant as the White Melilot, and has still smaller yellow flowers. These plants are troublesome as is any other that occupies land needed by cultivated crops. If left alone they are biennials, the root dying at the end of the second year, and after it has provided for its abundant increase by seed. If the tops are cut away before the seeds are ripe, we are met by another difficulty—cutting off the top prolongs the life of the root. Were a crop of seeds perfected this would so exhaust the root that it would die, but by preventing this we keep the old root which becomes stronger and pushes up its shoots year after year. There seems to be one of two alternatives: to grub up the root and make an end of it, or to cut frequently and continously; as often as there is a sufficient growth for the scythe to take hold of, it should be cut away. The difficulty attending the destruction of this and many other weeds when well established, shows how important it is for the farmer to be able to recognize these plants in their young state. At that time a stroke of the hoe will, without difficulty, destroy a pest which, when it gets full possession, may require the work of hours to remove it.

THE SWEET CLOVER (*Melilotus albus*).
Single Flower and Pod Enlarged.

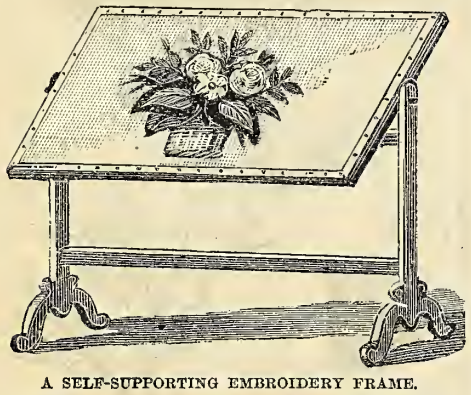
Currants are one of the welcome small fruits in mid-summer, being especially welcome in the hot days. If left to themselves the season is short, but by covering the ground around the bushes with a heavy mulch, a screen of cloth, or even of newspapers, the season may be prolonged by several weeks.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

An Embroidery Frame.

For large pieces of embroidery-work, a frame that will hold the work up in front of the worker is not only a great convenience, but almost essential. The engraving here given shows such a frame, which is cheap and easily made. It consists of two standards, or legs, with curved cross-pieces at their bottoms to give it a firm footing, and two horizontal bars to hold the standards together, as shown in the engraving. The frame, made of four wooden strips, is held to the standards by two wooden pins passing through the tops of the standards and the middle part of the ends of the frame. By this arrangement the frame can be swung around with ease and the work placed at any convenient angle.



A SELF-SUPPORTING EMBROIDERY FRAME.

To those accustomed to use the simple lap frame, or any other, it is not necessary to state that it is best to stitch a strip of strong linen, or tape, along the woof ends of the material, which must then be sewed firmly to the webbing on the frame. All this work of putting the foundation on the frame should be done before that is adjusted to the standards; this latter can be easily done by pushing the pins into the places made to receive them in the frame.

Home Topics.

BY FAITH ROCHESTER.

Care of Children's Teeth.

A mother of several children lately told me some of her experience. A few years ago she thought that her oldest boy's teeth in the front of the lower jaw were decaying badly. This was a disappointment to the mother, who had fed her children carefully on nourishing and wholesome food, as a general rule, keeping both pickles and confectionery from them. Studying the matter over, she jumped to the conclusion that what she had read concerning the mischief-making properties of the tomato must be true, especially as her husband, who was very free in his use of tomatoes in their season, had a peculiar trouble with his teeth. She had observed that the children's (especially the boy's) teeth grew white and clean when there was a plenty of ripe tomatoes, and she thought the acid of the vegetable probably went too far and acted upon the enamel of the teeth. But when the boy, then fourteen years old, went to a dentist to have his teeth filled, lo! there was no filling to be done. "Your boy has a splendid set of teeth," the dentist told the mother. "There is not a cavity in them. Unusually good teeth for a boy of his age." And the dentist had no doubt that the teeth were better than they would have been if the owner of them had munched candy and pickles, as children usually do. "They must be cleaned, and that without delay," he said. So the tartar which had gathered and crusted gradually at the crown of the teeth was removed by the dentist, and with it all appearance of decayed teeth. Now the boy has nothing to do but to keep his teeth clean in order to avoid dentistry bills in future. The younger children are warned to avoid the older brother's trouble by the daily use of tooth brushes. From their father's case they learn to avoid the opposite extreme. His teeth are hopelessly discolored, and a few are habitually loose, but the useful tomato is no longer suspected as the cause. He had an opportunity to read some in a work on Dentistry, and came to the conclusion that hard "scouring" of his teeth with gritty substances, when he was a young man, had worn away the hard enamel of his teeth so that the strong coffee he drank (during his soldier life especially) penetrated and permanently colored his teeth. I dislike to hear of *scouring* the teeth. When they have been neglected this may be necessary to get them once clean. The dentist has peculiar tools for removing tartar crust, but the yellow deposit on children's teeth can be cleaned away as the dentist does it, by any one. Take finely powdered pumice stone and a little clean soft pine stick to rub with. Dip the pine stick into water and then in the powdered pumice, and rub the teeth gently. Afterwards wash them with soap and water, using a tooth brush. It is well to use a little fine clean soap occasionally for cleaning the teeth, but plenty of pure water (a little warm in cold weather) will usually suffice for cleansing the teeth of persons of good dietetic habits. To make good teeth in the first place, beginning when we can begin, and allowing for "ancestry," the mother should eat plain and nutritious food, a varied diet well supplied with bone material, as the grains are when it is not bolted or sifted out, and lean meat. For young children milk should be freely used, and graham and oatmeal also. [We are glad that so sensible and practical a person as Faith Rochester, hits this tomato nonsense on the head. Some two years ago a paragraph appeared somewhere to the effect that much of the trouble with teeth was due to the free use of tomatoes. This was copied in all the papers, and thousands of persons gave up the use of tomatoes to save their teeth. We at once stamped this notion as nonsense, and are glad to have our denial of the injurious effects of tomatoes, made on general principles, supported by what comes very near being direct evidence.—ED.]

Clean Floors.

I admired my neighbor's bare floors until I found how they were made so spotlessly clean. "With soap and sand and a scrubbing brush," she told me.—"Applied by a woman down on her knees?" I asked.—"Yes," she replied. "You can have your's look like mine if you use the same means,"

No, thank you. Neither I nor my daughter shall put ourselves to this drudgery, and I shall not require it of any woman. Physicians say that the position assumed in order to scrub a floor with a brush and cloth makes the labor so done a positive injury to the woman, often resulting in very bad cases of female disease among working women. If floors must be scrubbed with soap and sand, a long handled brush or a broom should be used for the purpose. But all this hard scouring is unnecessary labor, if paint or oil be properly applied to the boards of the floor. Then only warm water or a weak suds is necessary for cleaning, and a nice long handled mop is the proper implement.

Starvation in the Midst of Plenty.

On the farm there ought to be plenty to eat for both man and beast. There is, usually, but they do not always get each a full share of nourishing food. The wheat alone contains all the elements necessary to maintain the growth and strength of the body. But when wheat is ground and bolted and made into ordinary fine flour, it is deprived of much of its most strength-giving properties. The fine flour is mostly starch, and starch alone can never make a very good "staff of life" to lean upon for strength. If the bran can only be made reasonably fine, it is better in our bread than out of it; but there is a great deal of graham (in western groceries at least) so full of coarse scales of bran that it is unfit for daily food, unless it is sifted through a common sieve. The portion of the wheat next the bran and mostly removed by the miller's bolting, is the most nourishing part of the wheat. To take this from the wheat and give it to the cattle is to starve our children in favor of the cattle.

What are the other staples of the farmer's bill of fare? Potatoes and pork. Potatoes are good food in their kind and degree, but not alone. Like most vegetables they furnish some of the mineral elements needed in the animal system, but they are mostly starch and water. They should only be used to help make a pleasant variety, and not, as is too often the case, as the main dependence. Children are sometimes half-starved on them, though they appear fat and so are considered healthy. Starch belongs to the carbonaceous foods, as do sugar and grease. All of these help to produce fat, but afford little strength. So the "fine, healthy-looking child," as ignorant people describe the big-cheeked, fat baby, may be tired and feverish, craving it knows not what, and an easy prey to disease, for lack of good nourishment. Potatoes for children should be well mashed and dressed with good milk, instead of butter and fat meat. Potatoes and beef go well together, each furnishing something that the other lacks.

Concerning pork I have little to say. We never use it in our family. Those who raise their own, may feel so sure of its healthiness as to eat it without misgiving, but I wonder how any one who depends upon the common market supply can relish pork. It is always poor food for children, or for any one inclined to be bilious, and especially bad for those who are at all tainted with scrofula.

Variety in the Daily Food.

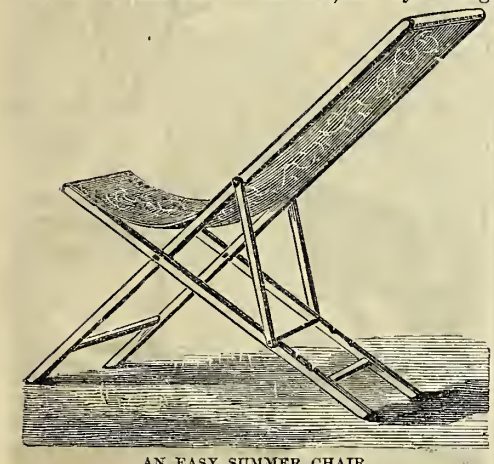
Though good wheat, or good beef, or good milk, may each furnish a perfect food, or contain all of the elements needed to support life, it is not best to depend upon any one article of food alone, except in the case of nursing babes, and then the mother should have a suitable variety. To obtain a variety, some house-keepers only go a round of different kinds of pie and cake, all equally bad perhaps; thinking that if the pantry is well supplied with these things, little other cooking is necessary. It is a great mistake. Cake and pie do not supply much actual food, and the good material that is used in them is put into such shape that the stomach is wearied and worn-out by the effort to digest them. This accounts for much of the tiredness complained of by women and girls. They are half starved, because their food is poor. The use of much poor trash called "dainties" (I don't abuse these things because I dislike them; I have a "sweet tooth," and know my own weakness well enough to understand the weakness of others), spoils the appetite for substantial food. The stomach is feeble for lack of good material in the blood (made constantly of our food and air) to repair its waste, and it takes food unwillingly because it is tired with overwork—overwork upon the concentrated conglomerations of rich cake and pastry. An error easily fallen into in such a case is to give up one thing after another because it "hurts" us, until the stomach becomes so weak it can hardly bear anything. It is slow starvation. We must not only "cease to do evil;" but must also "learn to do well"—not only give up unwholesome food, but eat plenty of that which is wholesome.

The proper variety is one made up of fruits, vegetables, grain, and animal food, the latter consisting of healthy meat, eggs or milk in its various forms. With palatable graham or oatmeal preparations, especially where milk is freely used, meat is seldom craved or found to be necessary to high health and strength, but when starch, sugar, and fat preponderate, as in the common fare of white bread and butter, potatoes, cake, pie, and a little sauce—beef (especially steak) often seems an absolute necessity to one who has to put forth strength. Coffee can not possibly supply its place. It does not *give* strength, but only stimulates it, or calls it out, making one *feel* strong while under its influence. Nourishing foods really strengthen us.

You would hardly believe, until you try it, how heartily a plain and nourishing variety of food is enjoyed by those who live with reasonable simplicity. It is easier in every way. All feel much better and more good natured, with no unreasonable cravings for confectionery, pickles, or stimulants. It lightens the care of children wonderfully. It makes the cooking more simple and easy, and, last but not least, it saves the doctor's bills.

A Canvas Chair.

While on a visit to some friends in the country, not long ago, we made the acquaintance of a chair which was so easy, cool, and altogether suited for summer use, that we give an engraving of it, for the benefit of other friends in the country. An explanation of its parts is scarcely necessary, as it can be easily understood from the figure. The legs cross as in a camp stool, two of them being long, and with the canvas, forming the high back to the chair. Two braces which are attached near the center of the back are joined by a cross-piece, which fits into notches seen at the rear, and by moving



AN EASY SUMMER CHAIR.

the braces up or down, the back may be brought nearly upright, or horizontal. When not in use, the chair may be folded up so that it will occupy but a small space. If the chair is patented, we failed to see the mark which the law directs shall be put on to indicate that such is the case.

A Hammock for the Household.

Merely the sight of a hammock hung in a cool and shady place is refreshing; it appears so comfortable and inviting. A hammock is not a sign of indolence, as some who think that they have no time for rest, except in the night, may regard it; it is rather an index of good sense upon the part of the owner who is aware that in the busiest life there are minutes that can be best spent in comfortable repose. Even on the farm in mid-summer there are half hours and quarter hours at noonday, or in the evening after the heat and work of the day are over, when the rest which an easy fitting hammock affords is just so much clear gain. Nothing that will give rest to the weary body and at the same time divert the mind is out of place in the farmer's household. If there are children in the family, there is nothing that can give them more amusement and comfort than a hammock, and the guests, whether of an hour or a day, will not object to the pleasure which it affords. Hammocks are not expensive, at least they do not now cost the price that they once did, when they were imported and their use was less general. Two or three dollars will now buy a very serviceable plain one; those that are elaborately made of course costing much more. In hanging the hammock it should be placed in the shade, either between two trees upon a lawn or upon the piazza and hung by hooks or screw-eyes placed in the columns or posts. If more particularly for children it should be somewhat lower than usual. For grown persons the hook which supports the head end should be six feet high and that for the foot four feet; this will afford the most desirable position for the occupant. The body of the hammock should be nearer the higher hook than it is to the other, and this may be secured by using a shorter piece of rope on the head end. There has been introduced recently a hammock hung to a portable frame; this frame folds up and occupies but very little space when not in use.

Of course, like most good things, the hammock may be abused—the comfortable rest which it gives may induce persons to remain too late out-of-doors, thus exposing them to the chilly or damp air of the night, but this is not the fault of the hammock, and no argument against its more general introduction as one of the wholesome comforts of the farmer's home during the hot months of summer.

Tents and Canopies for the Lawn.

To get out-of-doors in the hot days of summer is a common impulse. Even though the thermometer may show no marked difference in the temperature, the freedom of the open air is preferable to the confinement of the house. But to be out-of-doors one must also be in the shade. The natural shade of trees is pleasant occasionally, but rarely so desirable, take it altogether, as that of a tent. Trees are not always just where we wish the shade; the ground beneath them is often damp; and besides there are falling leaves, unwelcome insects, and other discomforts that make the tent preferable for a prolonged out-door sojourn. A tent may be made an important "annex" to the house in summer, and afford not only a pleasant place for reading, sewing, etc., but we have known it to do good service as the tea-room of the family during the hot days. The readiness with which children take to a tent as a play-ground is a sufficient evidence of its utility, were there no other. The simplest form of tent is a mere roof, without side walls, technically known as a "fly"—and this is in many cases all that is desired. Such a canopy is easily made and inexpensive. The materials out of which it may be made are various; common sheeting, heavy drilling, or duck, may be used; it will be found the cheapest in the end to get good substantial material that will last and look well for a number of seasons. The size of the canopy being decided upon, and the requisite material procured, all the making required will be to sew the breadths together and to make a broad hem at each end, with eyelet holes at each corner, and as many along the sides as there are to be ropes. If the material is heavy duck, the work must be done by a sail-maker, or by one who can use a sail-needle and "palm." Two upright poles, about 8 feet long, will be needed, and a light ridge-pole which will be as long as the width of the fly. An iron pin should be inserted in one end of each pole; this should be

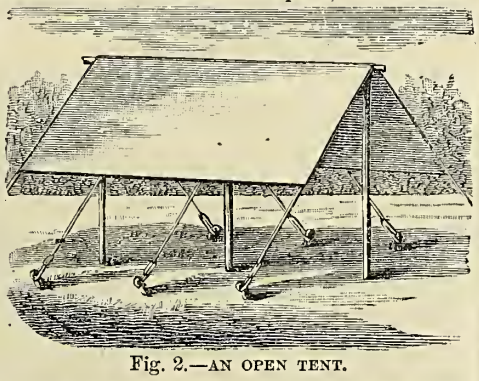


Fig. 2.—AN OPEN TENT.

long enough to pass through a hole in the ridge-pole, and it will be all the better if it pass through the ridge-pole and project a short distance to allow an eyelet in the middle of the edge of the canvas to go over it. This is not always done, but will add much to the firmness of the "structure." Guy-lines or ropes, for holding the canopy in its position, must be provided. These are secured to the edges or "eaves" by passing through an eyelet hole and making a knot in the end. Tent pins will be needed, as many as there are ropes; these are strips of hard-wood, pointed, for driving into the ground, and with a notch near the upper end for holding the guy-lines. For convenient tightening and loosening the ropes, it is well to provide each with a "becket," which is piece of hard-wood, about 4 inches long and an inch wide, with a hole in each end, as in figure 1. The end of the guy-rope is put through the holes and a knot made.

Fig. 1.

The open tent is now ready to pitch, and when in position is as shown in figure 2. In this form of tent the ends are entirely open, but end pieces may be added with but very little trouble and expense, and the tent is much more complete. After the pitch of the main part has been decided upon, the cloth for the ends is cut, so that it will fit upon the open end, as shown in figure 3. This piece may be kept separate and adjusted by lace strings passing through eyelets, or sewn fast, as desired. The pitch of the end piece should be the same as that

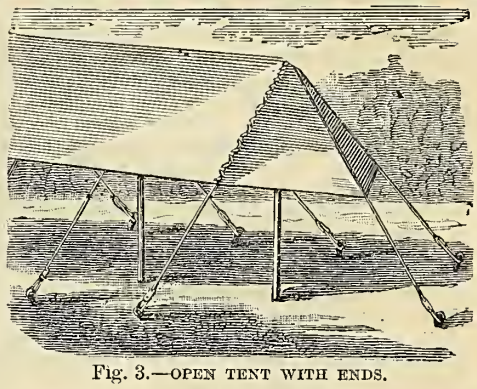


Fig. 3.—OPEN TENT WITH ENDS.

of the sides, and the bottom should come in the same plane. A single rope and pin will be needed to keep the ends in place. Those who prefer greater seclusion in their lawn tent, will find it in

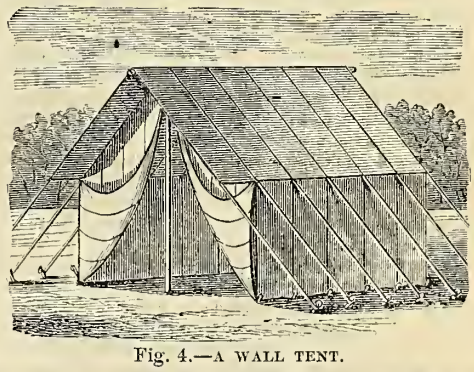


Fig. 4.—A WALL TENT.

the Wall Tent, shown in figure 4. They can be made of any size; and if of heavy material, can be used for "camping out." A wall tent complete has over it a fly, made just like the canopy first described. This makes the tent much cooler, and in heavy rains breaks the force of the storm and prevents leaking. A small Palmetto Tent, more especially adapted for children, is shown in figure 5, the construction of which can be easily seen from the engraving. The cost of it is small, in comparison with the amount of pleasure it can give the little ones, where they may "keep house all to themselves." If the tent is to remain for some weeks, it will add greatly to the comfort of those who use it to have it furnished with a floor. If the needed sills or sleepers and boards are cut the right length and put together with screws instead of nails, the floor will last for several years. In the suggestions for making a tent we have had shade and shelter only in view, but either style is capable of ornamentation; alternate strips of blue and white or red and white may be used, and the edges can be finished

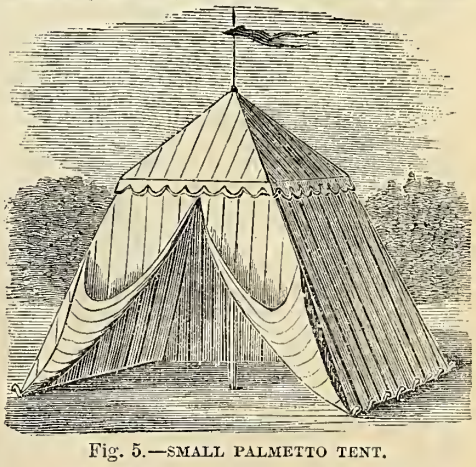


Fig. 5.—SMALL PALMETTO TENT.

by a scolloped border, as indicated in figure 5. Besides small flags may be successfully introduced.

BOYS & GIRLS' COLUMNS.

The Doctor's Talks.

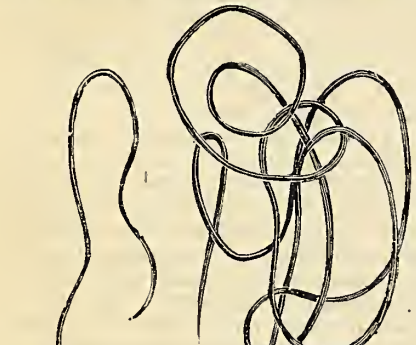
This month we will change our "Talks" somewhat, and instead of the mechanical forces of nature, have something to say about a living object. I do not know how many have written me, first and last, about the curious object generally known as

THE HORSE-HAIR SNAKE,

and the questions have not only come from youngsters, but from older persons. There is often to be found in shallow pools of water, and sometimes in horse troughs, a very long, slender object, curiously coiled and twisted upon itself, which has a very sluggish movement, but still enough to show that it is alive. The engraving, of the natural size, shows the so-called "Snake" to be a worm scarcely larger than a horse-hair, and about a foot long; being of small size, and frequently appearing in horse-troughs, many have supposed that it came from a horse-hair. Many people really believe that the hair from a horse's tail, after long soaking in water, can somehow "turn into" a snake. Indeed, I have known a person to keep a horse-hair in a bottle of water, expecting that it would

TURN INTO A SNAKE.

Many of the letters about it ask if the thing really comes from a hair, showing how widespread is this belief. Others simply ask what it is. Now this creature no more comes from a horse-hair than does a mud-turtle from a hoot-jack. It is a creature by itself, small, it is true, but is as distinct as any other and much larger animal. Naturalists have not yet quite learned all about this Hair Snake, but so far as known, its history, rightly looked at, is quite as curious as if the creature really did come from a hair. The creature is not in any sense a snake, but is a worm. Its scientific name is *Gordius aquaticus;* the first name having reference to the "Gordian Knot," the animal having a way of twisting itself up almost inextricably; its specific name, *aquaticus*, was given because it is always found in the water, there being several other species which are not aquatic. These worms lay their eggs, which are hatched, and the young Gordiuses, in some manner, find their way into the bodies of Grasshoppers, Crickets, Locusts, and Water Beetles, being probably taken in with their food. Inside of these insects, like tape worms in large animals, they live and grow, and when they have reached their full



THE HORSE-HAIR SNAKE.

size, after having lived upon the food which these insects have taken for themselves, they at length leave the host that has entertained them so long, and are fortunate if they make their escape near water, where they can live for a while and lay their eggs for a new crop. A friend who gives much attention to the study of insects, informs me that he has often seen these "Hair Snakes" coming from the bodies of crickets, and can confirm the observations of European naturalists.

That one animal can live within the body of another may be new to you. Such animals are called *Entozoa*, a word from the Greek, meaning *within an animal.* There is a very large class of creatures that thus pass the whole or a part of their lives, it may be within the stomach and intestines of another animal, or it may be in some other part, the liver, the brain, and various other organs, affording a home for these creatures. That an animal like the Hair Worm should live within the body of a Grasshopper or Cricket, is indeed very strange, but it is something more than strange, such knowledge is useful.

OUR DOMESTIC ANIMALS ARE TROUBLED

by various creatures that live within them. The Hair Worm, it is said, does not injure the Grasshopper, though it would not be of much consequence if it did, but with our domestic animals, while some of the Entozoa cause little or no trouble, others, when in great numbers, make them ill, and even kill them. You will find on page 308 an account of the Fluke; the creature that causes in sheep the fatal disease known as "Rot." I think that all of you who are old enough to read about this *Gordius*, will understand that story of the Fluke. This creature, the Fluke, is said to belong to a very low order of animals, as its "make-up" is very simple. If it is simple in itself, it makes two different animals, two that are much higher in the scale, serve as its nurses. Early in the life of the Fluke, a little snail takes care of it, but it soon wants better food than the snail can furnish. The snail in search of food crawls upon the grass in a wet place; a sheep in search of food eats the grass, and without intending it, takes the snail also. The snail of course dies, but the little Fluke has found just the place it wanted—if such creatures have wants—and it goes on and causes all the trouble described in the article upon Sheep Rot. There are other Entozoa which have even more strange ways of living; and I may describe some of them another time, but what I wish to point out to you is this:

SUCH STUDIES ARE USEFUL.

Useful not only because they show some of the wonders of animal life, and increase our knowledge, but have a real money usefulness. The naturalist who discovered that the young Fluke had the little snail for a nurse, added many hundreds of thousands of dollars to the wealth of farmers. He pointed out how the Fluke found its way into the sheep. No Snails, no Fluke, no wet pasture, no snails, and the preventive of the disease, is to keep sheep away from wet pastures. What a trifle it seems, to look at it in one light, but how important if we look at its usefulness to every farmer who keeps sheep! You may think I have wandered some distance, in going from Hair Worms to Flukes, but though they look so unlike, they are closely related; both are worms; both are Entozoa, or dwellers within other animals. I must tell you one more curious thing about the Gordius or Hair Worm. When the pool in which it happens to be dries up,

THE WORM DOES NOT DIE,

but, as we may say, goes to sleep, and waits until water comes again. How long it can wait, I do not know, but an Italian naturalist put one away in a drawer, where it was forgotten for three years, and when at the end of that time it was placed in water, it became as lively as ever.

My (The Doctor's Correspondence)

has not appeared for a few months, for the reason that most of the questions were answered in one way or an other in other parts of the paper. It often happens that a boy or a girl asks about something which is very much like what an older person has asked about. For example, here is "J. H. N." in Nebraska, who would like to know

ABOUT CANARY, OR BIRD SEED,

what kind of a plant it grows upon, and if he could raise it himself, as it is sometimes very difficult to get where he lives. Now this is just such a question as an older person might ask, and when I know that such an inquiry has been answered in the other parts of the paper, I do not care to put another in your columns. But as to Canary seed, it is the seed of a grass which has a very close head, not long and slender like a head of Timothy, but short and egg-shaped. It is, like the birds which eat most of it, a native of the Canary Islands, but the supply for this country comes mostly from Southern Europe, and is grown more or less in Germany and England. There will be no difficulty in growing it, for the Canary-Grass makes itself quite at home in this country; where the litter from bird-cages is thrown out, the plants come up, and it is not at all rare to find them in waste places. You may sow it early in the spring, either broadcast or in drills a foot apart; cut it when the seeds begin to ripen. It is a food that all cage-birds like—at least all the singing birds.... But some questions are not so easily disposed of. Here is one who would like to know about

THE MIDSUMMER NIGHT'S SONG.

That song or sound every one of you must have noticed. What a wonderful sound it is: The chirps, the hums, the buzzes of a myriad of crickets, locusts, and I do not know what other insects, all blending to make that sound, always to be heard on a warm summer's night. It is a peculiar dull roar, serving as the base to the tenor chirp of some near-by cricket, or the monotonous song of Mrs. Katy-did. But I did not set out to write about the sound, but I was thinking how much pleasanter it was to listen to it than it is to go in-doors to write. I am very sure that with cool evenings my budget of letters will increase in size. Sometimes the parents send questions to "the Doctor," and now and then I answer in the Boys' and Girls' Columns questions not especially intended for me.

A FOSSIL TOOTH,

came safely to our hands, and is not forgotten. I suppose it to be the tooth of some animal, the kind of which is no longer living, but though I have engravings of many such teeth, I find none quite like this. When I come across some geologist who studies such things, I will try to find out the name of the animal.

Picture Puzzle.

This is a queer kind of picture. The ox has some trouble with its head, as if some one was holding it back to keep him from eating the food in the pan that is for the dog. It may be that there is some one between the

two animals, and is keeping them from quarrelling. Is it moonlight? It may be that the obscure light of evening makes it more difficult to see the whole of the picture. To many of our readers, and perhaps all, the "picture in the picture," may be as plain as day. We hope for no trouble in finding what is to be seen.

Our Puzzle-Box.

WORD-MAKING.

(For explanation, see similar puzzle in the April number.)

1. List of words: lion, double, rat, beast, elm, matter, to; letters to be added, R, D. (Find the word in the above list, to which the letters R, D, may be added, to form another word by transposition.)
2. List: house, residence, future, tavern, local, tip; letters, O, H.
3. List: actor, basket, bust, model, gull, rim, pen; letters, R, A.
4. List: boat, steam, trotter, agate, little, conrse, miser; letters, Y, N.
5. List: Traveller, forest, broom, dust, clean, billow; letters, C. I.

CONCEALED QUOTATION.

(The original sentence may be found in Shakspeare's *Troilus and Cresida.*)

How did I remember? Well, I keep a diary, and there it says—"the thing was made with hard rope, and girdled with a band of Roman steel. In it he had Pygmalion's ivory woman, elegantly carved, besides a miscellaneous assortment of rings, hooks, instruments of torture and locks of human hair tied up with solferino ribbon."

DEFINITION PUZZLES.

(In each of the following definitions you can pick out the letters needed to spell the word that is defined. *Example.*—"One devoted to any service." Now for this you might think the word "servant" would answer, as you can find in the sentence the required letters; but "servaut" is not so defined in the dictionary. The word is "votary."

1. Odd and antique.
2. An instrument or vessel.
3. One suddenly raised to wealth or power.
4. Produce of vines, and the time of grape gathering.
5. A word having the same, or very nearly the same meaning as auother.
6. Simple; an inhabitant of the country.
7. Adorned; beautiful.
8. Destruction.

CHARADE.

My first is eaten, oft, with milk,
'Tis deemed by many, good;
And in my next the children meet
To take their daily food.

My whole is deemed a luxury
By many an epicure,
And yet it is a common thing,
You've seen it I am sure.

SCATTERED SQUARE.

(In the following verse, you will find in the first line the letters needed for the first word of the square, and, of course, the initials of the four words. In the second line of the verse may be found the letters for the second word of the square; in the third line, the third word; and in the fourth, the fourth. In the first line, for instance, you may find letters with which to make the words—heat, reap, pear, pier, race, ache, etc. And it may not be quite so easy to select the right one as you imagine.)

The peaches are ripe,
And red on the trees;
The flowers are perfumed
And scented the breeze.

CROSS-WORD.

My first is in cleaver but not in knife,
My next is in bagpipe but not in fife,
My third is in pity but not in ruth,
My fourth is in infant but not in youth,
My fifth is in fragment but not in piece,
My sixth is in poultry but not in geese,
My seventh is in bolster but not in bed,
My eighth is in yellow but not in red,
My ninth is in stay but not in bide:
My whole is nothing but empty pride. MAGGIE.

SUBTRACTIONS.

1. Take one from four and leave one.
2. Take two from five and leave one.
3. Take three from five and leave five.
4. Take two from three and leave five.
5. Take one from six and leave eight.
6. Take one from six and leave nine.

SQUARE WORD.

1. To desire.
2. A gem.
3. A household article.
4. A girl's name.

F. CLARK.

NUMERICAL ENIGMAS.

1. I am composed of 29 letters:
My 5, 10, 29, 15, 25, 8, describes a wheel in motion.
My 19, 13, 16, 22, 1, is an article of apparel.
My 17, 18, 11, 6, 14, 3, 2, 7, means this or that.
My 12, 28, 26, 20, 25, 21, is imaginative composition.
My 23, 6, 9, 4, 7, is extreme.
My 24, 17, 27, is heard of grasses and grain.
My whole cautions us against false pretenses.

2. I am composed of 11 letters:
My 3, 2, 10, 11, is much used by dressmakers.
My 6, 2, 2, 4, is a corner.
My 8, 5, 6, is a receptacle.
My 7, 10, 9, 1, is surly.
My whole is a bird. G. W. EVANS.

POSITIVES AND COMPARATIVES.

(*Example.*—Grain, an angle. Corn, corner.)

1. Goods found but not claimed; a thin cake.
2. A violent motion; a country in Europe.
3. What blasters do; to meddle.
4. An article of food; a tool.
5. To wait on; easily injured.
6. A number; general course.
7. A coin; the middle.
8. To clothe; a kitchen table.

ANAGRAMS.

1. Gift protegé.
2. B. Hunter.
3. Irene Post.
4. Rant scene.
5. Send rim.
6. Sent charm.
7. Drew, read.
8. Very idle.

ANSWERS TO PUZZLES IN THE JUNE NUMBER.

NUMERICAL ENIGMA.—This one half human, one half divine.

ANAGRAMS.—1. Naturalist. 2. Statesmanship. 3. Coagulates. 4. Youngster. 5. Unobserved. 6. Wretchedness. 7. Negative. 8. Disconcerted. 9. Examined (the anagram was erroneous, and the author apologizes). 10. Delivery.

CHANGES.—1. Heir, air. 2. Peer, pier. 3. Gilt, guilt. 4. Cousin, cozzen. 5. Sees, seize. 6. Not, knot.

TRANSPOSITIONS.—1. Sole, lose (shad, dash). 2. Dame, made. 3. Acre, race. 4. Runt, turn (hare, hear). 5. Veil, live. 6. Mite, emit.

ALPHABETICAL ARITHMETIC.—3014)91765082(30446. *Key—New Codfish.*

HALF SQUARE.

Y O S E M I T E
O L E V A N O
S E J O I N
E V O R A
M A I A
I N N
T O
E

ANIMALS ENIGMATICALLY EXPRESSED.—1. Mastodon. 2. Catamount. 3. Chinchilla. 4. Hippopotamus. 5. Panther. 6. Donkey. 7. Badger. 8. Goat.

CONCEALED NAMES OF POETS.—1. Brown. 2. Coke. 3. Cowper. 4. Scott. 5. Gay. 6. Logan. 7. Lowell. 8. Hall.

COUNTIES IN GEORGIA ENIGMATICALLY EXPRESSED.—1. Newton. 2. Chatham. 3. Stewart. 4. Campbell. 5. Upson. 6. Carroll. 7. Crawford. 8. Baldwin.

SCATTERED SQUARE WORDS.—

ARTS SHOT PILL AILS AIRS STAR
RIOT HARE IDEA IDEA IDEA TIRE
TOLE ORES LEAN LENT REAM ARTS
STEM TEST LANE SATE SAME REST

DOUBLE ACROSTIC. *Ethan—Allen.*

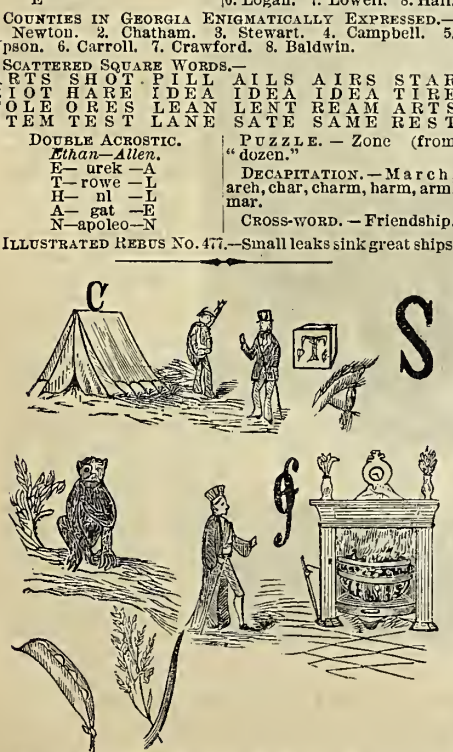
E— urek —A
T— rowe —L
H— nl —L
A— gat —E
N—apoleo—N

PUZZLE.—Zone (from "dozen."

DECAPITATION.—March, areh, char, charm, harm, arm, mar.

CROSS-WORD.—Friendship.

ILLUSTRATED REBUS No. 477.—Small leaks sink great ships.



No. 479. Illustrated Rebus.—A few words of wisdom worthy of study by both old and young.

Among the Birds.

This morning early, in fact, before we were up, the birds were out and giving their free open air concert, to all who would listen. The thoughts that this mingled morning song of gladness brought to us, were various; but among others, this; that perhaps the boys and girls of our *American Agriculturist* family, would like to have a Bird Rebus; and so we have had the artist draw some birds in his peculiar way. It is our work to give a little description of each, and leave it for the young readers to make out the rest.

The first bird we will notice, is pretty generally distributed throughout the country, especially near large bodies of water. It prefers the quiet and solitude of the forest during the day, and is most easily found in early morning, standing motionless by the side of a pond, etc., watching patiently for a fish, which, when within reach, is caught in the long bill, with about the quickness of lightning. Its nests are made in high forks of trees in swamps, where it is difficult for naughty or other boys to get the eggs or young birds. It may be said that the bird is of a bluish color, and has very long legs.—No. 2 is one of the common smaller birds, with rather highly colored plumage, sly, cunning, and very restless; in fact, a noisy bird, and one not at all liked by other members of the feathered tribe. It is unsafe to always judge of an object entirely from external appearances—so here the beautiful garb of this bird is not a correct index of the heart within. It is a robber of other birds' nests, sucking the eggs, and devouring the young, at the same time being attractive in form and coloring, and graceful in movement.—No. 3 is a game bird, and one that every hunter likes to find in abundance. When found in the deep forest, these large reddish-brown birds are very tame and unsuspicious, but in older parts of the country, they get very wild and shy, from frequent contact with the sportsman. The way a group of these birds will retreat and hide themselves when discovered, is quite surprising. The nest is built of brush and leaves, and upon the ground. On the wing this bird is very swift, and its flight is far from a silent one. Like little boys on campaign years, they do a considerable drumming.—No. 4 is one of the large birds of prey; that is, a bird which lives upon animals, and those often of considerable size. Stories are told of severe struggles between this bird and men, who are bold enough to go into the solitary mountain regions, where they abound. The head, neck, and front of the breast are bare of feathers, giving the great, ugly bird a savage and disagreeable appearance. No nests are made, but instead the two eggs, about four inches long, are laid upon the bare rock, with a few sticks around them.—No. 5 is a common bird in the United States; it builds its nest in holes, which it digs in sand banks, along the borders of streams. The hole is often 6 or 8 feet in length, and very crooked. Its food is mostly fish, which it obtains by diving. The note of this bird is loud and harsh, but when heard above the roar of the water-fall, is not disagreeable.—No. 6 inhabits the pine forests of the Northern and Middle States, and derives its food from the pine cones during the cold weather. The bill of this bird is peculiar, but so well adapted for its work, that nature in making it of an unusual form, knew well what she was about. During deep snows, they often gather around the hunters' and wood-choppers' cabins, in great numbers.—No. 7 raises its young in the neighborhood of fresh water lakes, in the interior of the United States, and is afterwards found along the sea coast in autumn. The nests are built in the tops of broken trees, out of danger from rising water, and egg-loving animals.—No. 8 includes a number of birds under the same name. The one we have selected, is a common and well-known kind, which comes North, from its warm summer quarters in the South, near the first of April. About the middle of May a nest is built in a lilac bush under the window, or in some other handy bush or tree. The nest is constructed of fine twigs, grasses, etc., and neatly lined with horse hairs. It is in these little nests, that the mean cow-bird lays her great white egg, which is hatched out by the little foster mother, to the great discomfort of her own little ones.—No. 9 is noted for getting up early in the morning, and does it by making circles in its flight, which grow larger and larger, as it gets higher and higher. All this time it is said to be singing a beautiful morning song. We say, "it is said," because this bird does not exist in America, but is famous in the countries of Europe. There is a kind in this country, that is frequently found in the meadows, but as far as we know, it has no enviable reputation for "going out to meet the sun,"—in fact, it is a low flyer, but pleasant in its singing.—No. 10, the last bird we will mention, is one noted for its great strength, it being a large "bird of prey." It is now seldom seen east of the Rocky Mountains, and is rare everywhere. This noble bird, over three feet in length, is remarkable for its long sustained flight, which it performs with the greatest ease and grace. It seems fitting that we should close our notice of the birds, with one which holds his high place, as the "King of Birds."

SOME OLD BIRDS IN A NEW FORM.

The Spring Beetle, or "Blacksmith."—A queer looking beetle came in a box by mail, which has been sent, as a great many other insects are, for a name and a description—that is, the sender wishes us to tell about it. This beetle is of a peculiar ashy-black color, with two large velvety spots on its back, which are mistaken for enormous eyes by those who do not observe that they are not in the head. The real eyes will be found in the head, and just back of the long feelers that are so finely jointed and look somewhat like a string of heads. If you happen to catch one of these beetles, as you may at this time of year, and place it on its back, you will see some fun. After a short time with a clicking sound the beetle will throw itself into the air and come down on its feet, and start off as if nothing uncommon had happened.

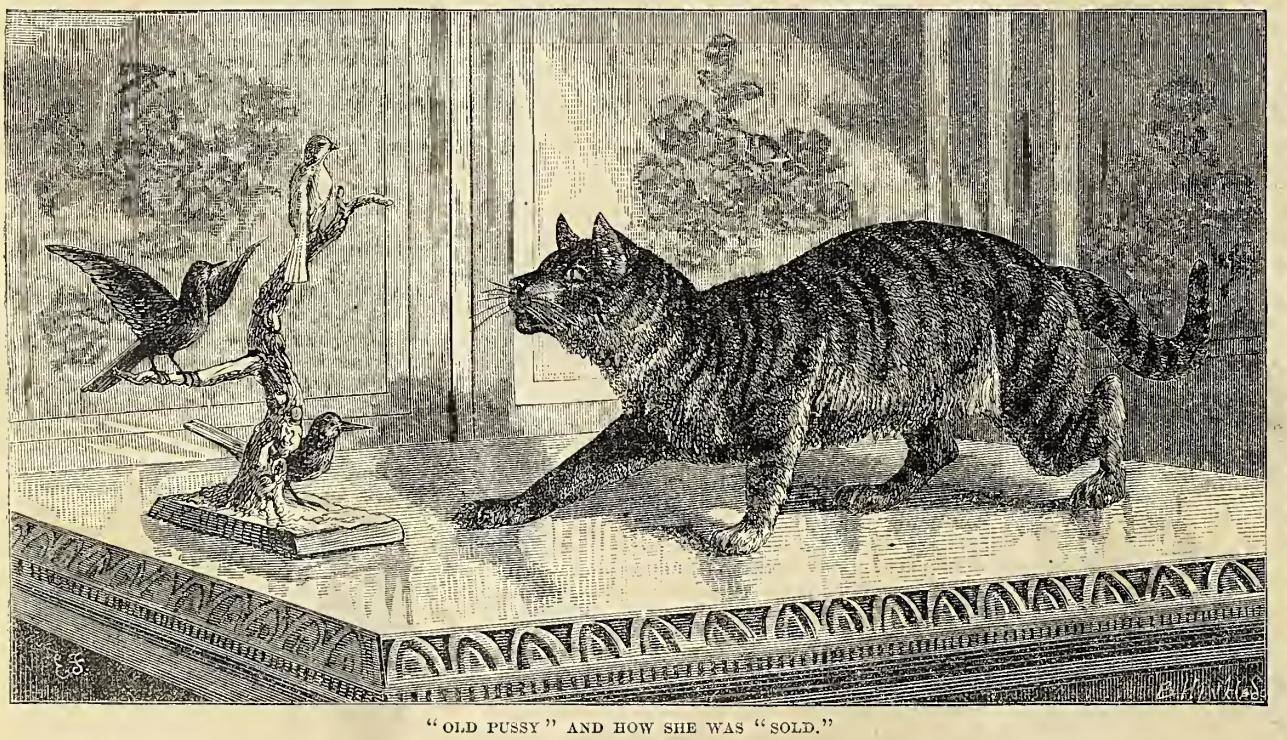
Harry and His Horse.

It is a little more natural for a farmer boy to want a horse than for him to want to wait until he is old enough to take care of it. I felt very big when I could be trusted with a horse out of sight of any other person, with my "red top" boots, and a real, live horse; but when I look back and think of it, I now see that the horse which I thought I must hold with all my might or he would run away, was a very old and gentle one that rather cared for me than I for him. He would not have run away for all the world—he had lived too long to see any fun in being fast, and to move at all was a matter of great exertion and self-sacrifice. When boys can not get hold of a real, live horse, they do the next best thing, which is, to have a wooden one. Of wooden horses there have been many sorts—perhaps more kinds than of real horses; but the ones that are the best, that is, nearest the child's heart, are those which he makes himself. The picture here given shows what a little friend of ours can do in the way of getting up a "play horse" that furnishes him a world of amusement for a time. It is a very crooked branch of a very crooked tree, with the limbs coming out from the body in such places that they really look like the legs of a horse—at least they are of the same number. As for the head, though a little slender perhaps, it is seen to be the head. Not so much can be said of the tail. Well! some horses are "bob tails," though they are not so common now as some years ago. Harry has evidently had great sport with his pony, and has just brought him in from a drive, and has hitched him to a post—it is not always safe to hitch them thus, as they may frighten other horses that do not easily recognize their wooden representatives as horses. It is well to throw a blanket over him, as he may be sweaty, and there may be a draft blowing that might bring on a hard cold. How intently the large, rather, queer-shaped eyed animal is feeding from the great, banded mitten. The oats, it is hoped, will make "Charlie" more fleshy than at present—though he is doubtless a race horse, and can not be expected to carry much extra flesh. The only fault I can find with the care of the horse is the lack of care of the drum—it is feared that with one single well directed kick the music-box will come to an untimely end, and in this, the year for drums. Harry in his haste for his own dinner—but his riding has made him very hungry—has overlooked the drum, but it is hoped that when he returns for his afternoon ride he will find everything all right. How Harry would feel to find his horse gone—to find that the hitching-strap had been broken, and "Charlie" had left for parts unknown. With such a tight hitch, and such a good supply of food so close at hand, it may be expected that everything will be in order, while in waiting for the return of the young horseman. If the horse gets away under such circumstances, may it not be a sort of evidence that he has been led astray by some other boy perhaps? The care which a boy will thus bestow upon a lifeless, and some may even say ugly, stick, is to be highly praised, it is but the youthful overflow of a regard for the feelings of others; and whatever will develop that manly trait, even if it is the feeding of make-believe oats to a make-believe horse, should be encouraged. The boy that takes the best care of the toy that he makes or has had given him, will make the kindest, best, and most humane of men. For my part I see a good side in Harry in his giving his horse a safe place and a good feed before he goes to his own dinner, in waiting for him. U. H.

THE WOODEN HORSE AT DINNER.

The Cat and the Birds.

Cats and dogs, it is generally said, do not get along well together, but I have seen them so thoughtful of each other's interests and feelings, that there seemed to be a sort of affection between them: as if Old Bruno loved Tabby, and Tabby loved Old Bruno. Such cases are rather rare, it is true, and when we do see them they give us much pleasure. But when it comes to cats and birds the feeling is somewhat different. The cat seems to feel that a bird is made to be caught and eaten, and on the other hand the bird acts as if it thought that to keep out of the reach of the cat is the safest thing to do if its life is valued. There have been cats that, by severe training, have been made to feel that a bird's life is not for her to take; but it is an unnatural state of the cat's mind, and not to be depended upon. The time may come when the cat and the bird will lie down together; but it seems a long way off.—As cats now are, if they do lie down together, you may be sure that the bird will be on the inside of the cat. The instinct of animals is very strong; that something which impels the lion to eat the deer, and the bear to find its living animal food, is by nature so strong that any thing like "Daniel in the lions' den" will always be a striking story to children, because it is so unnatural and uncommon. The picture, which is here given, teaches a great deal, while it is at the same time pleasing and almost funny. Here is a table, partly shown, upon which a stand of stuffed birds has been left, we may suppose for a short time, with no one in the room—save the household cat. "Old Pussy," that at most times would not do the wrong thing—would not get at the cream or milk, etc., because her "bringing up" has taught her better things, sees these birds so plump and life-like within her reach. With the quiet and stealth of a tiger, she creeps upon her prey! What a meal of nice tender bird she thinks is in store for her, and with this one thought of securing it, we find her upon the table, and with the greatest caution approaches the game, step by step. But now her eyes show that she has some doubt, as she pauses and looks half intent, half deceived, upon the feathered creatures that are quite too tame for birds of flesh and blood. They do not flutter their open wings or move their little heads, but have their eyes fixed with a glassy stare upon the coming foe. Because we love the little harmless birds more than the larger cat, whose nature it is to catch them—and for which we can not blame her—we all enjoy the picture, and are apt to exult in the safety of the work of the bird-stuffers, and have but a grain of pity for "Pussy," who has had her practice in bird-catching for her pains. In the supposed cruelty of the cat we are apt to forget that the bird, when alive, did not hesitate to take the life of an insect, with just as much cruelty, and while the cat is catching one bird to satisfy its hunger, the bird is perhaps killing a hundred, or a thousand, insects, to preserve its life. But the cat must retire from her high place on the table, where she should not be, and that quickly too, when the owner returns, with the feeling that all things in this world are not what they at first seem.



"OLD PUSSY" AND HOW SHE WAS "SOLD."

Uncle Hal.

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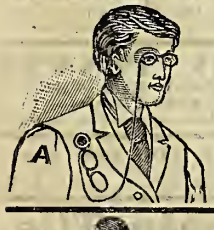

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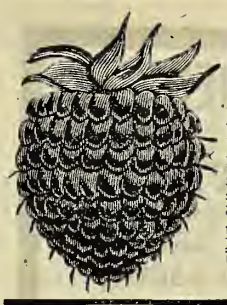

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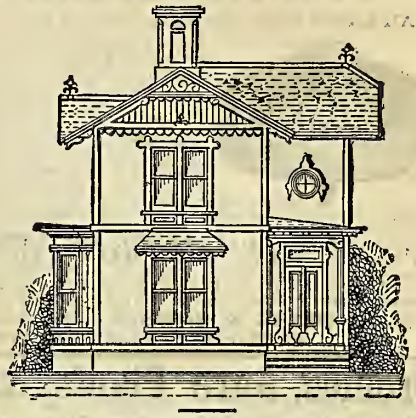

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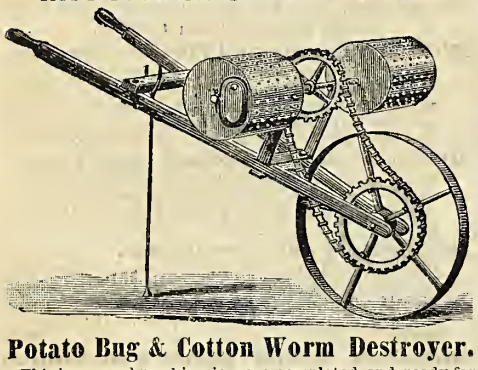

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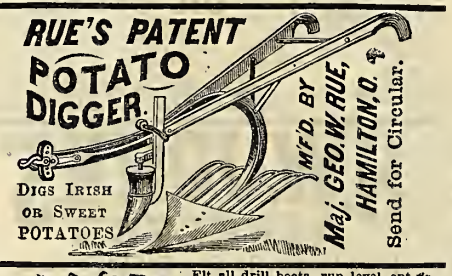

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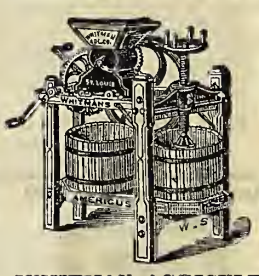

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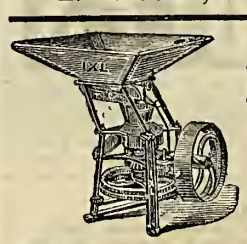

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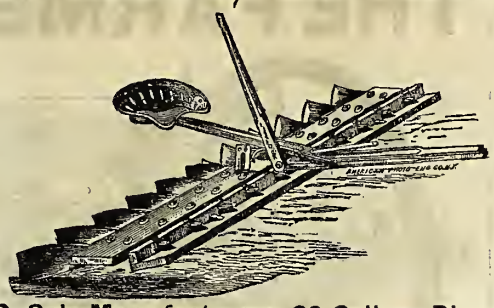

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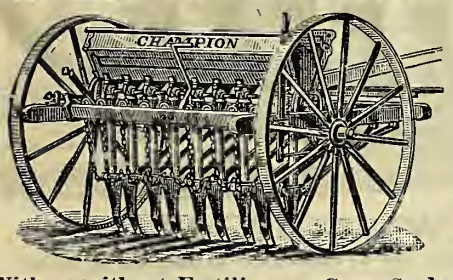

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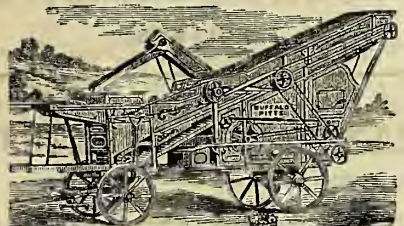

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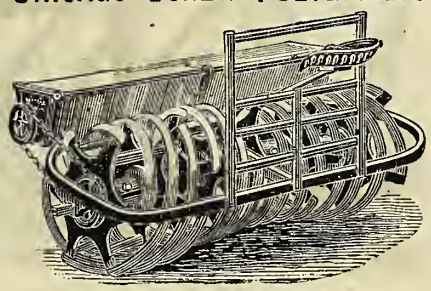

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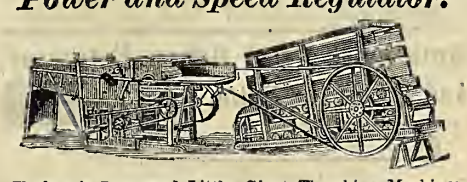

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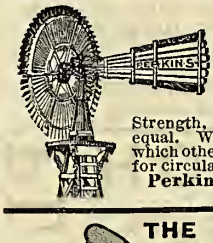

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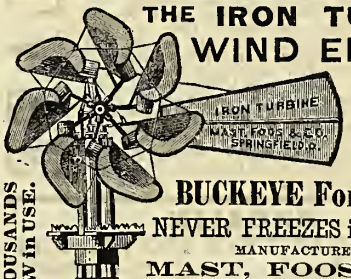

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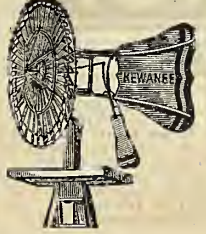
E. B. WINGER, Snccessor to STOVER WIND ENGINE CO., **Freeport, Ill., U. S. A.**

Ne Plus Ultra Automatic Windmill.

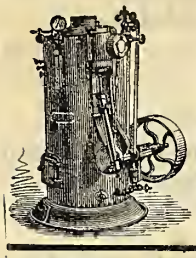


New, ten foot diameter of wheel, one horse-power, elegant and durable, made expressly for **raising water for Farm and House Uses.**

PRICE **$50.00.**

Any person can set them up.

KEWANEE M'F'G CO., 35 Broadway, N. Y.



Bookwalter Engine.

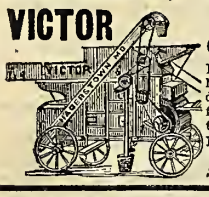
Compact, Substantial, Economical, and Easily managed. Guaranteed to work well and give full power claimed. Engine and Boiler complete, including Governor, Pump, &c., at the low price of

3 Horse-Power...$240.00
4½ " " ... 280.00
6½ " " ... 370.00

☞ Put on Cars at Springfield, Ohio.

JAMES LEFFEL & CO.,
Springfield, Ohio,
or 110 Liberty St., New York City

VICTOR

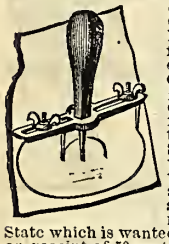


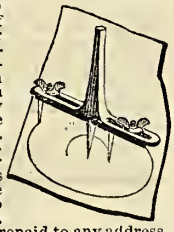
Double Huller Clover Machine

Is the **only** Huller that has ever hulled **100** bushels of seed in one day from *damp and wet straw*. Send for *Descriptive Circular*, which contains many letters confirming this.

Hagerstown Agricultural Implement Mfg. Co., Hagerstown, Md.
State where you saw Advertisement.

ECONOMY WASHER CUTTER.





(Pat. July 15, 1879.) Cuts washers of leather or rubber for carriages, wagons, mowing machines, etc., from ¼ to 4 inches in diameter, entirely finished by one turn of the hand. Simple, strong, always ready for use. The knives are of saw-blade steel. Are also made for brace. State which is wanted. Sent by mail prepaid to any address, on receipt of 50 cents. Liberal discount to agents.

WILLARD BROS. & BARTLEY,
Cleveland, Ohio.

EVAPORATING FRUIT.

SENT FREE | Treatise on improved methods. Tables, yields, prices, profits, and general statistics.
AMOS STOUFFER, Chambersburg, Pa.

ZIMMERMAN

FRUIT AND VEGETABLE

DRYER & BAKE OVEN

Over 11,000 in use.

The BEST in the Market,
Made entirely of *Galvanized Iron*

AGENTS WANTED.

Send for Circular. Address

ZIMMERMAN FRUIT DRYER CO.,
Cincinnati, Ohio.

COPPER PATCH PLATE

For mending Tin, Brass, Copper, Lead, or Iron, without acid or soldering iron. Any lady or child can mend with it. Will send one sample Plate by mail (with directions) that will cut 192 ½-in. square patches, on receipt of 25c.; 8 for $1; 100 for $10. (Postage stamps rec'd as cash.) AGENTS WANTED. Can carry one day's stock in your pocket. Sales will yield $3 to $15 per day. Our 64-page Illustrated CATALOGUE of Chromos, Jewelry, Novelties, Stationery, &c., FREE. Address CITY NOVELTY CO., 108 South 8th St,, Philadelphia, Pa. Mention this paper.

RECALIN PRESERVING POWDER.

Awards and Medals: Centennial; "Superiority," by the American Institute, N. Y.; as **"The Best Preserving Salt"** at the International Dairy Fair.

Tasteless. Preserves Butter, Eggs, Cider with fullest aroma as if fresh; Invaluable for Pickles, Fruits, Vegetables, and on Salted Meats.

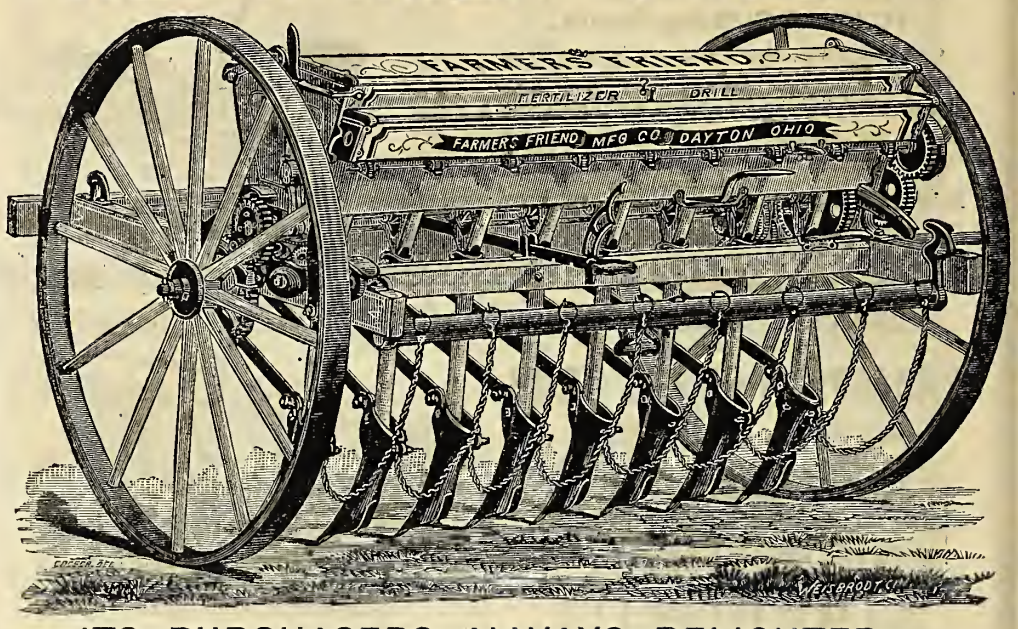
50 cent box sent by mail on receipt of price.
Address **C. AM ENDE, Hoboken, N. J.**

C. GILBERT'S STARCH

$14 SHOT GUN! The Best Double-Barreled Shot-Gun in the world for the money. Warranted genuine twist, with ***flask, Belt Box Wads, Box Caps and Wad Punch.*** Also our celebrated Kentucky Rifle for ***$12, warranted or no sale.*** Send for Illustrated Catalogue and Price Lists to

James Bown & Son, Enterprise Gun Works,
136 & 138 Wood St.,
ESTABLISHED, 1848. ***Pittsburgh, Pa.***

THE FARMERS FRIEND.



ITS PURCHASERS ALWAYS DELIGHTED.

A Complete Machine is being now turned out every 15 minutes to supply the demand.

IT SOWS ANY KIND OF GRAIN OR FERTILIZERS, AND IS REGULATED MORE QUICKLY AND ACCURATELY THAN ANY OTHER.

It is the lightest running, simplest, most durable, and perfect Drill manufactured.

If you want a Drill send for a Catalogue and Prices at once.

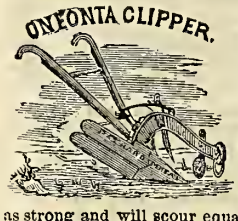
Branch Houses, Distributing Points, and Agents in nearly every section. Address

FARMERS FRIEND M'F'G CO., Dayton, Ohio.

Kelly Steel Barb Wire.

Stock-Proof, Storm-Proof, Fire-Proof. Weight only One Pound to the Rod.

Is Free from Litigation. Patented in 1868, and licensed under all first Patents. **A Fence for a Lifetime. Has No Superior, and Admits No Equal.** The Kelly diamond-shape **Steel Barb** is placed on the wire without loss of metal, leaves no room for moisture to rust the wire, retains its sharp points, and saves fully 10 per cent in weight per rod. Buy no other. If your Merchant don't keep it, send direct to Manufacturers. Send for Catalogue. THORN WIRE HEDGE CO., Chicago, Ill.



This Plow contains the most remarkable improvements ever made in Swivel Plows. It is easy to handle, with **Shifting Handles,** which enables the operator to walk with both feet in the furrow. The Hook or Latch is operated by the foot, so that the Plow is turned ready for use **without taking the hands from the handles.** Light to draw, firm, strong, and durable. Constructed of Patent Hard Metal, which is as strong and will scour equal to steel. We also make it of charcoal iron, at a less price.

An Illustrated Catalogue of all our Tools and Implements sent free.

THE BELCHER & TAYLOR AG'L TOOL CO.,
Chicopee Falls, Mass.

EWALD OVER,

MANUFACTURER OF

VICTOR THREE AND FIVE HOED ONE-HORSE WHEAT DRILLS.
VICTOR ONE-HORSE RICE DRILL.
CARTER'S AUTOMATIC FARM GATE.
RAGAN'S POWER CIDER PRESSES.
VICTOR DOUBLE "A" TRIPLE-HINGED HARROW.
HECTOR STONE CYLINDER FORCE PUMPS.
VICTOR HAND FIRE ENGINES.
Indianapolis, Indiana. Send for Circular.

Muth's All Metal Honey Extractor,

And Uncapping Knife.

Have received the Highest Encominms!- Also Langstroth's Bee Hives; Honey Jars, and a full assortment of Bee-Keepers' Supplies. Every Bee-Keeper should send for my circular giving the details regarding the Care of Bees and How to get the most Honey. Sent free on application.

CHAS. F. MUTH, No. 976 Central Ave., Cincinnati, O.

EMPLOYMENT—LOCAL OR Traveling State which preferred. Also SALARY per month. All EXPENSES advanced. WAGES promptly paid. SLOAN & Co. 306 George St. Cincinnati. O.

CALVANIZED CABLE FENCE STRAND.

The only Wire Fence that stands the test of time.

NO BARBS.

PHILIP S. JUSTICE, 14 N. 5th St., Philadelphia, Pa.

New and Greatly Enlarged Edition of

PRACTICAL FLORICULTURE.

A Guide to the Successful Cultivation of

FLORISTS' PLANTS,

For the Amateur and Professional Florist.

By PETER HENDERSON.

Author of "Gardening for Profit," and "Gardening for Pleasure."

ILLUSTRATED.

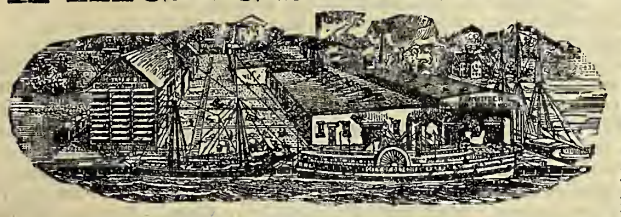
This valuable work, by Mr. Henderson, has become well known and deservedly popular everywhere. In it not only is the whole "art and mystery" of propagation explained, but the reader is taught how to plant and grow the plants after they have been propagated. The work is not one for florists and gardeners only, but the amateur's wants are constantly kept in mind, and we have a very complete treatise on the cultivation of flowers under glass, or in the open air, suited to those who grow flowers for pleasure, as well as those who make them a matter of trade. The work is characterized by the same radical common sense that marked the author's "Gardening for Profit," and "Gardening for Pleasure," and it holds a high place in the estimation of lovers of floriculture. The important additions of new matter that have been made to the present edition, have been written mainly as general answers to hundreds of questions that have suggested themselves to those already in possession of the first and second editions of this work.

PRICE, POST-PAID, $1.50.

ORANGE JUDD COMPANY,
245 BROADWAY, NEW YORK.

THE HOMESTEAD,

A HIGH-GRADE SUPERPHOSPHATE.



Our works are among the most complete and extensive in the country, and have every appliance to enable us to furnish Standard Fertilizers at the Lowest Price. Our machinery is of modern and improved construction, and our goods are made under the guidance of an able chemist, who inspects every lot before being placed on the market. With the large amount of capital invested in the HOMESTEAD, we are much more interested in having its high character maintained than any individual purchaser could possibly be; and this fact alone should assure the farmer that every pound he buys is all that is represented.

As manufacturers of Animal Charcoal, we have at our hands the most valuable material used in making fertilizers—viz., Bone Black Dust. This fertilizing substance contains eighty per cent. of phosphate of lime, against fifty-five per cent. contained in raw bones; and its well known value commands so high a price in the European markets that but very few manufacturers of fertilizers in this country use it. Although the HOMESTEAD Fertilizer costs us more to manufacture than if prepared of the materials generally used, we shall continue its present high standard, and place on the market a genuine, pure Bone Black Phosphate.

ALMONT, MICH., June 18th, 1879.

MICHIGAN CARBON WORKS, DETROIT, MICH.:

Gentlemen:—Please notice the enclosed photograph of wheat cut from the same length of drill, seven inches apart—superphosphate and no superphosphate. Draw your own conclusions which is which. Of course, this is showing more difference than the field will average; but this shows what superphosphate will do on very poor soil. This was cut from a very poor spot, but each having the same chance, with the one exception. It was cut 12th of June. Shows the earliness of that fertilized. I have the best piece of barley in this section—100 lbs. superphosphate per acre sown on wheat stubble. The best farmers here are taking note of these things.

Very truly,

F. J. GROAT.

MEDINA, ORLEANS CO., N. Y., August 7th, 1879.

MICHIGAN CARBON WORKS:

Gentlemen:—Enclosed please find a photograph of some barley. This barley was grown on A. H. Poler's farm, four miles south of Medina, Orleans Co., N. Y.

I made a frame four feet square and set it in the standing grain on the day of its being cut. I then cut and gathered all that stood within the frame of each, where there was phosphate and where there was no phosphate. I let it lay in the sun one day to cure, then weighed each bundle as you see it on the photograph.

The phosphate was put down with the seed with a fertilizing drill, the teeth being six inches apart. These bundles were cut side by side, only six inches apart. The one on the left of the photograph had no phosphate, and weighed twelve ounces. The one on the right had one hundred and forty pounds of the Homestead Superphosphate to the acre, and weighed two pounds and fourteen ounces to the four feet square. *This is correct.*

A. H. Poler also experimented on corn, potatoes, and winter wheat, with as good results on each as on his barley. Of course he has not harvested his corn; but it stands sixteen inches higher than the rest of the corn and earing one-half better.

Yours, respectfully,

GEO. W. POLER.

ACTUAL RESULT AT OUR SEED-FARM ON LETTUCE SEED.

Homestead produced	583 lbs. per acre.	116 lbs. of lettuce seed, at $1.25	$145 00
Where none was used	467 " "	560 lbs. of Homestead, at $40 per ton	11 20
Difference favor of Homestead	116 " "	Actual profit per acre	$133 80

D. M. FERRY & CO.

Send for Circulars, giving full reports of results and all particulars in regard to use.

☞In places where we have no authorized agent a barrel of 200 pounds will be sent on receipt of $4.

ODORLESS FLORALIS.

Prepared expressly for Lawns, Flower Gardens, Pot and House Plants.

DIRECTIONS.—Use three tablespoonfuls of the manure to a gallon of water. Steep twelve hours before using, and keep well stirred while being applied. Do not apply oftener than once in two weeks.

PRICES, { Box containing 10 lbs. $1 00; " " 25 lbs. 2 00; " " 50 lbs. 4 00

Sent anywhere in the United States or Canada, by express or freight, on receipt of cash orders.

MICHIGAN CARBON WORKS, Detroit, Mich.

GOOD AGENTS WANTED IN EVERY TOWN.

STOCKBRIDGE MANURES

Now is the time to order for **FODDER CORN, HUNGARIAN GRASS, BUCKWHEAT, TOBACCO, BEANS, TURNIPS, etc.** For Pamphlets and Price Lists send to

BOWKER FERTILIZER CO., 3 Park Place, New York. 43 Chatham St., Boston, Mass.

CHAPMAN & VAN WYCK,

(Established 1849),

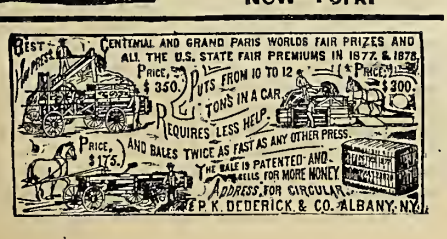
DEALERS IN

PERUVIAN

Guano

EXCLUSIVELY,

170 Front Street, New York.



Pure PREMIUM BONE

Premium Bone

IS THE

Standard of Excellence.

THE GREAT GRAIN and GRASS FERTILIZER.

The Original Premium Bone Fertilizer is now manufactured on a large scale at Alliance, O. It is made from best bone stock and is warranted Pure.

Address the Originator,
LEWIS SCHILLING, Pres't,
Excelsior Fertilizer Company,
ALLIANCE, OHIO.

I. X. L. SPRING TUG LINK

Patented Feb. 3d, 1880.

Affords the greatest protection to **HORSES,** Harness, Wagons, Plows, Mowers and Reapers. Reliable and guaranteed as represented. Protect your Horse, save your money, by procuring the celebrated **D. RISHER & CO.'S** I. X. L. Spring Tug Link. Ask your hardware man for them, or send to

D. RISHER & CO.,
Corner of 4th and Wood Streets, Pittsburgh, Pa.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from Page 300.

In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations are seldom repeated, as those who desire information on a particular subject can cheaply obtain one or more of the back numbers containing what is wanted.

Back numbers of the "American Agriculturist," containing articles referred to in the "Basket" or elsewhere, can always be supplied and sent post-paid for 15 cts. each, or $1.50 per volume.

The German Edition.—All the principal articles and engravings that appear in the *American Agriculturist* are reprodnced in the German Edition. Besides these, there is a special department, edited by an eminent German cultivator. Our friends can do us a good service by calling the attention of their German neighbors and friends to the fact that they can have the paper in their own language, and those who employ Germans will find this Journal a most useful and acceptable present.

Bound Copies of volume 38, and of every previous volume back to Vol. XVI. (1857), neatly bound, with gilt backs, Index, etc., are supplied at $2 each (or $2.30 if to be sent by mail). See Publishers' Notes, 2d cover page.

Clubs can at any time be increased by remitting for each additiou, the price paid by the original members; or a small club may be made a larger one at reduced rates, thus: One having sent 6 subscribers and $7, may afterwards send 4 names more and $3, making 10 subscribers for $10.00; and so for the various other club rates.

Terms to New South Wales, New Zealand, Australia, Africa, etc.—To several inquirers. Under the latest revision of the Postal Union Regulations the price of the *American Agriculturist* (either English or German edition), including postage *prepaid* through, will be covered by 7 shillings sterling per annum. This applies to the above countries, and to all others embraced in the General Postal Union. The simplest mode of remittance is by Postal Money Orders, payable in London, to the order of Orange Judd Company. These can be readily cashed in N. Y. City at a slight discount, which the publishers will cheerfully pay. For Club rates, (postage included), see our second cover page, and reckon 22 cents to the shilling sterling.

Grain Drills.—The even sowing of the grain at the desired depth, the proper covering of every grain, and therefore a saving in seed, are some of the important points in favor of using grain drills. Within a few years a new value has attached to these implements: the grain is sown in rows, and thus allows of the use of a cultivator, or Wheat Hoe. The importance of stirring the soil between the rows of wheat is now becoming well understood; and the practice of hoeing wheat is on the increase. In Sept. last we illustrated a home-made wheat hoe, and there are some implements for the purpose now offered by their makers. With the more general use of the wheat hoe the method of broadcast sowing must pass away. Except on new land, where the stumps are thick, there is nothing in favor of the broadcast sowing.

Soil and Dry Weather.—"Heavy crops succeed a season of drouth." There are good reasons for the truthfulness of the above remark. In the first place, a wet season, especially one with heavy drenching rains, causes the soluble food materials to be carried down deep into the soil, or even out of reach of the plants, if the subsoil is very porous. On the other hand, during a drouth, a reverse action takes place; then, as the surface moisture is evaporated the loss is made good from below; the water in the soil is brought up by capillary attraction, and with it the salts of potash and other fertilizing materials are carried up towards the surface of the soil and left there as the water is evaporated. It is upon this principle that the alkali covering on the western plains is produced. During a drouth the vegetation is not vigorous, and but a small crop is removed from the soil; the soil during dry weather is, so to speak, having a holiday—a sort of half-way summer fallow—in which food elements are forming in the soil, and not being used up by the plants because it is too dry for them to do much at growing. With such a preparation it is natural that the crop the next season should be a good one, provided there is rain enough for the sown plants to grow.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our record kept daily during the year, show at a glance the transactions *for the month ending July 10th*, 1880, and for the corresponding period last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

Receipts.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
24 d's *this* m'th	396,000	6,281,000	4,889,000	79,000	307,000	1,331,000
22 d's *last* m'th	401,000	3,605,000	4,117,000	102,000	291,000	1,108,000

Sales.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
24 d's *this* m'th	412,000	23,956,000*	8,311,000*	138,000	—	2,504,000*
22 d's *last* m'th	347,000	23,794,000*	7,491,000*	156,000	—	2,337,000*

* Including sales for forward delivery.

2. *Comparison with same period at this time last year*

Receipts.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
24 days 1880..	396,000	6,281,000	4,889,000	79,000	807,000	1,331,000
23 days 1879..	341,000	2,987,000	5,101,000	196,000	312,000	1,171,000

Sales.	*Flour.*	*Wheat.*	*Corn*	*Rye.*	*Barley.*	*Oats.*
24 days 1880..	412,000	23,956,000	8,311,000	138,000	—	2,504,000
23 days 1879..	456,000	8,148,000	8,439,000	289,000	—	1,393,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush
July 7, '80..	1,520,213	440,977	73,367	25,425	623,115	216,075
June 7, '80..	1,251,384	105,442	61,464	26,425	461,490	184,747
July 7,'79..	1,159,019	1,917,747	60,147	45,099	211,662	158,640
July 11,'78...	1,591,132	720,784	138,852	174,000	207,769	663,075

4. *Exports from New York, Jan. 1 to July 9.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
'80.	1,930,093	28,283,258	24,468,581	993,650	271,000	282,300	205,500
'79..	1,529,000	23,233,450	17,821,000	2,213,900	101,800	396,600	193,000
'78..	1,299,200	22,978,000	14,317,700	2,220,600	1,512,200	1,202,300	290,000

CURRENT WHOLESALE PRICES.

	June 10.	July 12.
Flour—Super to Extra State	$3 35 @ 5 00	$3 40 @ 4 60
" Super to Extra South'n.	3 35 @ 7 00	3 40 @ 7 00
" Extra Genesee	5 00 @ 6 25	4 75 @ 6 00
" Superfine Western	3 35 @ 4 50	3 40 @ 4 15
" Extra Western	4 00 @ 8 50	4 15 @ 8 50
" " Minnesota	4 10 @ 8 50	4 25 @ 8 50
Rye Flour, Superfine	4 60 @ 5 00	4 50 @ 5 00
Corn-Meal	2 50 @ 3 15	2 50 @ 3 15
Corn-Flour, per bbl	2 90 @ 3 50	2 75 @ 3 25
Oat Meal, ℔ bbl	4 50 @ 6 50	4 50 @ 6 50
Wheat—All kinds of White.	1 20 @ 1 30	1 10 @ 1 18½
" Red and Amber	1 15 @ 1 33	1 00 @ 1 27
" Spring	1 05 @ 1 22	1 00 @ 1 14
Corn—Yellow	55 @ 58	50 @ 51½
" White	55 @ 58	51 @ 54
" Mixed	52 @ 55	47 @ 50
Oats	39 @ 47½	34 @ 41
Rye	96 @ 98	78 @ 83
Barley	Nominal.	Nominal.
Hay—Bale, ℔ 100 lbs	70 @ 1 05	70 @ 1 10
Straw, ℔ 100 lbs	50 @ 1 15	50 @ 1 10
Cotton—Middlings, ℔ lb	11⅞@ 12	11⅜@ 12
Hops—Crop of 1879, ℔ lb	27 @ 40	25 @ 38
" " 1878, ℔ lb	7 @ 20	7 @ 15
" olds, ℔ lb	4 @ 12½	4 @ 10
Feathers—Live Geese, ℔ lb	45 @ 52½	45 @ 52½
Seed—Clover, West. & St.℔ lb	6¾@ 7¾	7 @ 7¾
" Timothy, ℔ bushel	2 40 @ 2 65	Nominal.
" Flax, ℔ bushel	1 40 @ 1 55	1 40 @ 1 45
Tobacco, Kentucky, &c., ℔ lb.	3 @ 14	3 @ 14
" Seed Leaf, ℔ lb	6 @ 40	6 @ 40
Wool—Domestic Fleece, ℔ lb	28 @ 55	24 @ 52
" Domestic, pulled, ℔ lb	25 @ 56	22 @ 52
" California	18 @ 38	18 @ 35
Tallow, ℔ lb	6 @ 6⅛	6⅛@ 6¼
Oil-Cake—℔ ton	32 50 @33 00	32 00 @32 50
Pork—Mess, ℔ barrel	11 35 @11 40	13 00 @13 50
" Extra Prime, ℔ barrel	9 50 @ 9 75	Nominal.
Beef—Extra mess	10 00 @10 50	10 00 @ —
Lard, in trcs. & bbls, ℔ 100 lb	6 80 @ 7 40	7 05 @ 7 67½
Butter—State, ℔ lb	13 @ 21	16 @ 23
" Western, poor to f'cy, lb.	9 @ 20	12 @ 23
Cheese	8 @ 12½	7 @ 9¼
Eggs—Fresh, ℔ dozen	10 @ 13	12½@ 14½
Poultry—Fowls, ℔ lb	8 @ 14	10 @ 15
" Chickens, ℔ lb	18 @ 34	16 @ 25
" " ℔ pair	35 @ 90	— @ —
" Roosters, ℔ lb	4 @ 6	6 @ 7
Capons, ℔ lb	18 @ 22	— @ —
Turkeys—℔ lb	8 @ 11	10 @ 13
Geese, ℔ pair	1 00 @ 1 50	1 12½@ 1 62½
Geese, ℔ lb	— @ —	— @ —
Ducks, ℔ pair	50 @ 80	45 @ 60
" ℔ lb	— @ —	15 @ 20
Pigeons, ℔ dozen	40 @ 2 50	70 @ 2 00
Snipe, per doz	20 @ 2 00	1 75 @ 2 00
Peaches, ℔ crate	— @ —	75 @ 4 00
Plums, ℔ qt	— @ —	5 @ 7
Apples, ℔ barrel	2 00 @ 4 50	1 25 @ 3 50
" ℔ crate	— @ —	75 @ 2 00
Gooseberries, ℔ bushel	7 @ 10	1 25 @ 1 50
Cherries, ℔ lb	5 @ 15	4 @ 12
Currants, ℔ lb	— @ —	4 @ 8
Whortleberries, ℔ half bu.	— @ —	2 50 @ 3 50
Blackberries, ℔ qt	— @ —	5 @ 10
Raspberries, ℔ cup	— @ —	3 @ 7
Potatoes, new, per bbl	2 00 @ 5 00	50 @ 3 25
" ℔ bbl	1 00 @ 1 75	50 @ 1 25
" Sweet, lb bbl	— @ —	— @ —
Tomatoes, new, per box	60 @ 3 00	1 00 @ 4 50
Turnips ℔ bbl	75 @ 1 25	— @ —
" white, new, ℔ 100 bun	75 @ 2 00	2 00 @ 4 00
Beans—℔ bushel	1 25 @ 1 75	1 25 @ 1 80
Egg Plants, ℔ crate	— @ —	1 25 @ 2 00
Peas—Canada, in bond, ℔ bu	82 @ 85	— @ 85
" new, green, ℔ bag	— @ —	2 00 @ 3 50
" new, per bbl	2 00 @ 5 50	— @ —
Corn, Green ℔ 100	— @ —	50 @ 1 25
String Beans, new, p. crate	75 @ 2 50	— @ —
" ℔ bag	— @ —	2 00 @ 2 75
Carrots, ℔ bbl	1 50 @ 3 00	— @ —
Beets, ℔ 100 bunches	1 50 @ 3 00	1 50 @ 3 00
Cabbages, new, ℔ 100	5 00 @10 00	4 00 @10 00
Onions—℔ bbl	— @ —	4 00 @ 5 00
" ℔ crate	1 75 @ 3 00	— @ —
Squash, ℔ bbl	1 50 @ 2 00	1 25 @ 2 25
" ℔ crate	25 @ 50	— @ —
Watermelons, ℔ 100	— @ —	10 00 @35 00
Spinach, ℔ bbl	50 @ 75	— @ —
Asparagus, new, ℔ doz. bun	75 @ 1 75	— @ —
Radishes, new ℔ 100 bun	1 00 @ 1 25	50 @ 1 50
Cucumbers, ℔ 100	— @ —	50 @ 1 50
" ℔ crate	1 75 @ 2 50	— @ —
Lettuce, ℔ bbl	1 50 @ 2 75	1 75 @ 3 00
Cauliflower, ℔ doz	— @ —	1 00 @ 4 00

An active and generally huoyant Stock Market; growing case in Money; depression in Foreign Exchange; and extraordinarily free movements in the Produce line have heen the prominent features of the past month. General merchandise has not been in much request, and has been irregular as to values, though the changes have not been very important....Comparatively little interest has been shown in Cotton, especially on speculative account, and the fluctuations in price have been within narrow limits....Wool has heen attracting more attention, opening the month at easier figures, hut leaving off more firmly. The more urgent offerings of Foreign formed a leading influence in causing the early depression. It has been noted that the fall in value of the past few months is most noticeable in the medium and low grades, and is especially evident in the decline on Super Pulled Wools, which, during the activity of the late Winter, reached a point higher in proportion than any other class. Good Supers, which in February commanded 62c.@65c., can now he bought for 42c.@45c., a shrinkage of over 30 per cent....Petroleum has heen advanced sharply, closing huoyantly, on reduced offerings in the seahoard markets, and a more urgent inquiry from the export interest....Naval Stores varied little, on a slow trade....In the Provision line, Hog products have been quoted decidedly higher, and active; partly due to speculative influences; but largely to the extraordinary export drain, particularly for British and Continental markets. Beef irregular, and slow of sale. Butter has been recently in fair demand, at hardening rates. Cheese fell very materially in price, early in the month, under a pressure to realize, but has since rallied about 1½@2c. ℔ lb from the lowest point, on a freer call for shipment. ....Hops have heen quoted lower, as tbe available supplies bave been more liheral, and holders more eager to place them, leading to increased activity....Unusual animation has been reported in the way of Breadstuffs, here, as well as at the interior, on more or less excited and disturbed markets; the tendency, early in the month, having been, as a rule, decidedly downward; while within a week or two, Wheat has rallied sharply, as influenced, mainly, hy the reports from the West, of very unfavorahle weatber and resulting damage to the maturing crops. The heavy rains also were represented as causing mnch delay and trouble in preparing the harvested grain for market. On Friday, July 9th, business in Winter Wbeat bere was characterized by remarkable excitement and huoyancy, notably No. 2 Red, on which a further and very marked advance was made, especially on early deliveries, which, on very meagre offerings, were run up 5c.@7c. a hushel, as against operators having contracts to provide for, calling for deliveries within the first half of the current month; and options, in sympathy, gained ahout 2c.@3c. a bushel. Settlements to a limited extent of early deliveries were forced at the extreme figures. Subsequently, values weakened perceptibly, but the market clcsed more firmly. Spring Wheat has been recently in very good request, for shipment, at rising prices. The foreign market advices have been more encouraging to the export interest. Corn fluctuated here considerahly, closing heavily, on, bowever, an active movement. More inquiry has heeu reported for Oats, which, however, closed at reduced figures. Rye attracted increased attention, almost wholly for forward delivery, prime Western leaving off for August delivery at 78½@79; and September at 76½@77. Flour has been more freely dealt in, opening weaker, but closing more firmly.....Tbe visible supplies of Wheat—embracing the boards at lake ports, in transit, and on the seaboard—at latest dates, embraced ahout 12,265,000 bnshels,—of Corn, 16,733,000 busbels; of Rye, 211,350 hushels; of Barley, 236,000 hushels, and of Oats, 2,824,000 bushels, against on January 31, an aggregate of 30,100,000 hushels Wheat, 13,100,000 hushels Corn, 979,000 hushels Rye, 4,155,000 hnshels Barley, ann 3,080,000 hushels Oats.....Ocean Grain freights have heen decidedly hrisk—largely in the chartering line, and on speculative account, at advanced rates, closing firmly, including hy steam to Liverpool, 6@6½*d.* per husbel; to Bristol. by steam, to 9*d.* per bushel; to Antwerp, by steam, to 8@8½*d.* per hushel, and sail to Cork, for orders for vessels of average carrying capacity—say 3,000 to 4,000 qrs.—5*c.* 6*d.* per qr. of 480 lbs.

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
June 14	12,697	78	5,160	35,640	30,747
June 21	15,673	119	5,532	38,728	28,016
June 28	14,315	85	5,407	32,605	24,560
July 5	13,970	67	4,986	32,093	25,061
Total for 4 *Weeks*	66,655	349	21,085	139,066	108,384
do. *for prev.* 4 *Weeks*	61,746	150	25,113	142,638	126,298

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week	14,164	87	5,271	34,766	27,096
do. do. *last Month*	15,436	37	6,278	35,659	31,574
do. do. *prev's Month*	13,485	69	4,700	26,505	36,585

Prices for beeves the past four weeks were as follows:

WEEK ENDING	*Range.*	*Larger Sales.*	*Aver.*
June 14	8¾@10½c.	9½@10¼c.	9⅝c.
June 21	8¼@10½c.	9 @ 9½c.	9⅜c.
June 28	7 @10¼c.	9 @ 9½c.	9⅜c.
July 5	6 @10¼c.	9 @ 9½c.	9¼c.

Beeves.—Tbe receipts have not varied much from the average for the four weeks. There was an uncommonly active market during the second week, with good prices. The Texans and Cherokees, the first of the season, came in during the thlrd week. Tbese steers sold at 7@7½c., to dress 55 lbs.; Colorados to dress 56 lbs., sold at 9@9½c. The range for native steers was from 8½c. to dress 56 lbs., to 10½c. to dress 57 lbs....**Milch Cows.**—There is a dull market for these now. Prices range from $25 to $55 per head; but for an extra milker for family nse, as high as $60 to $65 is sometimes given. ... **Calves.**—All grades of calves have had quick sales and good prices. Buttermilk calves were firm, and sold at 2½@3c. for ordinary to extra, and Veals at 4@6c. for common to choice....**Sheep and Lambs.**—Prime sheep were in demand and sold readily. Lamhs were also in request, and the montb closed witb a firm market. Sbeep sold at 3½@5½c. for poor to choice; Southern and Western lambs at 5½@6½c.; those from New Jersey and Pennsylvania at 6½@7c....**Hogs.**—There are no live bogs for sale. Tbe market quoted nominally at 4½@5c.

The Horse Market.—There has been some demand for light carriage borses that would sell for $300 to $350. Heavy draught horses bave been wanted, and brought a good price. Tbere has not heen much doing in the otber grades; in fact, the horse market is dull.

Prices of Feed.

Cotton-seed meal	per ton.	$30.00
Linseed-cake meal	"	37.50
Middlings	"	24.00
Bran	"	23.00
Corn-meal	"	23.00

Prices of Fertilizers.

Nitrate of Potash (95 per cent.), per lb.	8 @8½c.
Sulphate of Potash (potash 44 per cent) per lb.	3½@4 c.
do. do. (potash 27½ per cent) per lb.	1½@1⅝c.
German Potash Salts (potash 12 to 15 p.c.) p. ton.	$16.00@18.00
Muriate of Potash (potash 50 per cent), per lb.	2 @2¼c.
Nitrate of Soda, per lb	5@5¼c.
Sulphate of Ammonia (25 per cent.), per lb.	4 c.@4½c.
Dried Blood (ammonia 13 per cent) per ton	$40.00@45.00
No. 1. Peruv. Guano 9 p. ct. ammonia, standard, ℔ ton.	$55.00
do. do. Lobos, do. do. do.	46.00
do. do. guaranteed, ℔ ton, cargo K	56.00
Soluble Pacific Guano, ℔ ton	45.00
Excelsior Fertilizer Works, Fine Ground Raw Bone,	55.00
Mapes' Complete Manure (clay soils) per 1,000 lbs.	25.50
do. do. do. (light soils) per 1,000 lbs.	25.50
do. do. do. "A" Brand, (wheat) ℔ 1,000 lbs.	20.00
do. Beet do. per ton	49.50
do. Cabbage do. do.	47.50
do. Tobacco do. do.	52.00
do. Fruit and Vine Manure, per ton	37.00
do. Asparagus Manure, per ton	51.00
Homestead Superphosphate	40.00
" Tobacco Grower	60.00
Banner Raw Bone Flower	45.00
Stockbridge Rye Manure, do.	45.00
" Wheat do. do.	45.00
" Seeding Down Manure, do.	40.00
Bowker's Wheat Phosphate, per ton.	40.00
Baugh's Raw Bone Phosphate, per ton	33.00
Baugh's Manure for Tobacco and Grain, per ton	45.00
Walton, Whann & Co.'s Raw Bone Phosphate	40.00
Gypsum, Nova Scotia, ground, per ton	8.00

Farming with Irrigation.

It is a common idea that those who can irrigate their land are independent of changes of the weather and otber natural influences. While irrigation allows lands to he tilled, which, without it, are valueless, and greatly increases the yield, and consequently the value of most arable land, it does not place the farmer quite heyond the reach of all untoward influences. The following note from G. Thompson for the past four years the Water Master for the District, which inclndes Richmond, Utab, is of interest. He writes: "The Water Master in this district is appointed hy the City Authorities, and glves honds in $600 for the faitbful performance of his dnties. He has all control of waters leading from the mountains in the district of four miles square; to assess and collect taxes for the repair of water courses and ditches, and the distribution of waters during the season. We have 2,500 acres of farming land, and 350 city lots. The amount of taxes per year on farm land is $500, and on city lots $300. The Water Master receives a remuneration of five lbs. of wheat to the acre, and 25 cts. to tbe city lot. We water the farm land on an average of twice each season. City lots, for vegetables and trees, have water once per week. Last season the grasshoppers ate two-thirds of our grain crops, and most of the grass from the stock range, so it was very hard on our stock last winter. We had to commence feeding on the first of November. Therefore straw stacks, straw sheds, and every eatahle thing had to go to keep our animals alive. I had 45 acres of small grain last year, and it yielded me only 750 hushels. Thirty-five acres produced on an average 5⁶/₇ hush. to the acre, on account of grasshoppers. On the remaining ten acres (in corn the previous year), it averaged 55 hush. to the acre. Tbe land has heen in crop for 19 years in succession, except wheu the grasshoppers summer-fallowed it for me."—Are grasshoppers an unmixed evil?

Ice Houses and Filling Them.—At this season frequent inquiries are made about Ice Houses. There are a number of illustrated articles on ice houses in the back numbers of the *American Agriculturist*, among the most important of which are: those of October 1870—Nov. 1871—Oct. 1874—Dec. 1875—Dec. 1877—Nov. 1878. In these a variety of structures are described, from a small shed to a large commodious house. Those who contemplate huilding an ice house would do well to consult these numbers; if he has not the volumes, any number can be obtained post-paid from this office for 15 cents.

Veterinary Education.—Every now and then we are asked if one can not qualify himself to be a Veterinary Surgeon by studying by himself, and are asked what books should be used. We would gladly aid and encourage self-instruction in every case where it is proper. The present improved condition of veterinary medicine is due to the fact that the Veterinary Surgeon of the present day is no longer a conceited but ignorant "horse doctor," but a man who has qualified himself for his profession, and is as well educated as the regular M. D. We do not propose to aid in lowering this standard by the encouragement of any half-way qualification, and one can no more properly fit himself by his unaided studies to practice upon beings with four legs than he can to doctor those with two legs. In both cases the very foundation of a proper education is a thorough grounding in anatomy and physiology; these can only be properly learned by the aid of dissection under a competent demonstrator; this, if nothing else, would prevent one from educating himself, and there are other equally strong reasons against its practicability. The fact is, that no profession holds out greater inducements in the promise of a successful and profitable career, than that of Veterinary Surgeon. But it only offers this to those properly qualified. While it no doubt seems otherwise to the applicants, we are really doing them a kindness when we advise them to not add to the number of half-educated quacks who call themselves Veterinary Surgeons. Those who intend to be properly educated can do much in the way of preparation by a study of text books in the various departments of instruction. The list is too long to be given here, but those interested in the matter will find it in the catalogue of the American Veterinary College, which may be obtained by addressing Prof. A. Liautard, Dean of the Faculty at the College; No. 141 West 54th St., New York City.

"Some" Experience with Rabbits.—One of our editorial staff, had a bright lad of 11 years, who had the rabbit fever quite bad. He produced figures to show that he could pay all his own expenses if he could get the "plant." So, after considerable investigation in the market, the father took home a fine pair of lop-ears, at a cost of $25, and ordered an improved "Hutch" constructed at a cost of $16. While waiting for this, the rabbits were kept in two large dry-goods boxes made of inch pine boards. The young "proprietor" went early every morning to count up the expected progeny, and had as much figuring on the results as the milkmaid had on her eggs. But one morning's observation showed by the teeth marks, that some strong animal had gnawed and wrenched off the inch-thick boards and the scattered fur and bits of skin were all that remained of the splendid dam. The "state of mind" of the "proprietor" was not to be described. — MORAL: Ask the Boy for it. P. S.—Thinking that the marauder, whatever it might be, would be meat-hungry again, and try the buck, a liberal amount of beef was placed near the box. This was gone the next morning. A few rods off was a monster dog, of the "female persuasion," which had evidently laid down to rest, and forgot to wake up at daylight. Some may suppose that the Arsenic bottle got overturned accidentally on that meat. But there wasn't any arsenic on the place, either in any of Prof. Dana's crystals, or in any other form. We haven't said anything about s-t-r-y-c-h-n-i-n-e.

About Lightning Rods.—The lightning rod venders have established such a bad reputation that the people in all parts of the country are shy of them. If there are any who deserve to be trusted it is their misfortune to be engaged in a business in which there is such a number who are to be avoided. In cities there are persons in the business of erecting lightning rods who thoroughly understand it, and who have established a reputation for good work and fair dealing. Those who live beyond the reach of competent parties, and who wish to protect their buildings are at a loss how to accomplish it. Our advice is often asked in such cases, and this is intended as a reply to a number of inquiries. There is nothing about the proper erection of a lightning rod that may not be done by any intelligent person, aided, it may be, in some parts, by a blacksmith. The rules to be observed are not many, but they must be intelligently complied with, else the work had better not be undertaken. An imperfect rod is vastly more unsafe than none at all. If one starts without a pretty thorough familiarity with the laws of electricity, he needs much fuller instructions than can well be given in such an article as we could find room for in our pages. Fortunately there are excellent little hand-books in which the subject is treated in all necessary detail; one of these is by Prof. John Phin, and there is another, the name of the author of which is not just now at hand. Taking a work of this kind as a guide, one should carefully study it in advance of beginning the work, in order that the principles involved may be well understood. While copper is a better conductor of electricity than iron, the greater cost causes iron to be generally used. A round iron rod $^{7}/_{16}$ in diameter may be used, but the use of square rods and of flat strips is becoming very common. A strip an inch wide and $^{3}/_{16}$ of an inch thick is a good size, is easily applied, and when painted of the same color as the house is not generally noticeable. Contrary to former notions, the rod may be painted any desired color. Insulators of glass between the rod and the house are regarded as worse than useless; were they of use at any time, so soon as they become wet their insulating power is offset by the conducting power of the water. The termination of the rod in the air was formerly of platinum or of heavily gilded metal, and great care taken to have a sharp point. Now iron is used, and little attention given to sharpness. A rod projects a few feet above the chimney, and there are uprights often along the ridge. The proper termination in the ground is of much importance. The lower end should by all means reach permanently moist earth, and it is all the better if a rod can end in a well. Prof. Phin's work may be had of the Orange Judd Co. Price by mail 50c.

Dog Fennel Once More.—Our friends in the Southern States are occasionally troubled by their cows giving bitter milk, and we have had a number of inquiries within the past few months as to a remedy. When the milk is bitter from anything that the cows have eaten, we doubt if anything can be done to remove the unpleasant taste. In such cases prevention is better than cure. Ascertain what causes the bitterness and keep the animals from it. There appears to be some disagreement as to the plant which causes the trouble. A lady wrote from Texas that it was due to "Dog-Fennel," while Prof. Phares, of Miss., ascribes it to "Bitter-Weed." It is quite likely that both are right, as both are positively bitter herbs. Dog-Fennel is the common name for *Eupatorium fæniculaceum*, an own brother to the well known Boneset or Thoroughwort. Bitter-Weed belongs to the same family of plants, but to a very different genus, being *Helenium tenuifolium* and is a southern brother to our well-known Sneezewort. The statement by Prof. Phares, that cows will not eat Dog-Fennel (July, p. 285) is now contradicted by H. Woodbury, Morgan Co., Mo., who says that cows will eat this and various other weeds. He says that in his own State and in Arkansas, he has seen them leave a pailful of corn-meal slop and eat the Dog-Fennel, and suggests, as seems very probable, that they eat this and other bitter plants as a kind of tonic. Milk is too sensitive an article to tamper with, and no attempt to neutralize or overcome any unpleasant taste or odor, derived from the animal's food, is likely to succeed. The remedy must begin with the pasture.

The American Institute will hold its Semi-Centennial Exhibition, next year; this year its 49th exhibition will begin Sept. 15th, and last until Nov. 27th. It perhaps cannot be avoided, but these occasions are largely used by dealers to advertise their wares, and much that is shown can be seen in the shop windows. Still, in spite of this, there is always enough that is really new and useful to make the exhibition well worth attending, and the spacious building is sure to be well filled, at least every evening during the season. There has been in past years much concerning the management of the Institute that has been sharply criticised, but the present Board of Managers seem to be working to make the Institute as widely useful as possible. Among other indications of this is the encouragement this year offered to "Amateurs and Apprentices in all branches of Mechanical, Industrial and Decorative Art." It is proposed to admit "without charge, for exhibition and competition, all such work as may be approved, and to award premiums to those who may excel in the arts named." We understand that besides the regular trades and the acknowledged arts of Sculpture, Painting, Drawing, etc., this offer includes Fancy Work, Embroidery, Decorated China, Wood Carving, Scroll Sawing, and all other artistic handiwork, calculated to adorn American Homes." Applications for space are to be made before Sept. 1st, to the General Superintendent, Room 22, Cooper Union, New York City.

Turnip Greens.—"A. W. K.," Oldham Co., Ky., sends for trial the seeds of "Turnip Greens," which is the basis of the Kentucky dish known as "jowl and greens." The plant, according to our correspondent, is a variety of turnip which produces a large top and a small woody turnip, and in his climate is sufficiently hardy to generally grow all winter. The seed is sown at the same time as late turnips, and the greens may be had any time during the winter. He says:—"We commence eating greens after Jan. 1st, boiling them with a small piece of bacon, or in salt water, if preferred." He says the plant is liked by bee-keepers as a producer of pollen and honey.

Silk Culture in Alabama.—Samuel R. Lowery is President of an Industrial Academy at Huntsville, Alabama, where it is proposed to give colored youths of both sexes a thorough English education and instruct them in various Agricultural, Horticultural and Mechanical pursuits. Prof. Lowery proposes the raising of silk upon a sufficiently large scale to test its value as affording an occupation, especially to females, being greatly encouraged by the experiments that have been made on a small scale by his family. Every endeavor by the colored people to help themselves, has our best wishes, and if this experiment helps establish the practicability of silk culture as an industry it will benefit the country at large.

Facts About Florida.—A correspondent who left Wisconsin on account of his health, and settled in Florida only after two years of wanderings and explorations, takes what we have no doubt is the correct view of the State as a place for settlers from the Northern States. He thinks that the State has been much over-praised by parties interested in the sale of lands. He says: "Many have come here who have failed elsewhere, and nine out of ten of these will fail here. There is an honest living here for those who will earn it, in the raising of about the only thing the country is fitted for—Oranges. I owe much to the country, but I would advise no one to own a grove unless he can come here to attend to it personally." And to this we would add, that it takes some years to get an orange orchard into *profitable* bearing. Of course one must have capital enough to start the trees, and either capital or other resources to subsist upon while caring for the trees and waiting for them to bear. These points should enter into one's calculations in advance. With a bearing orange grove, we presume, there are no doubt many attractions in the business, in the climate, etc., if one can locate so as to have desirable social and educational advantages for a young family, if he have one.

Rye for Soiling.—The first soiling crop in early spring is rye. For this purpose it should be sown late this month or early in September. A deep, mellow soil, well supplied with rich manure, is the one which gives the best returns for the trouble. After it is cut in the spring the rye will spring up again, and even a third crop may thus be obtained from the same sowing, and at intervals of a few weeks.

Population of our Large Cities for 1880.—The returns of the Census recently taken show the following population for the 17 cities of the United States having over 100,000 people. The population of the same cities for 1870 is also given, to show the growth that has taken place in the past ten years:

	1880.	1870.		1880.	1870.
New York...	1,207,000	952,000	Cleveland..	156,000	93,000
Philadelphia	847,542	674,000	Pittsburg..	153,000	86,000
Brooklyn...	554,000	396,000	Buffalo	150,000	117,000
Chicago	474,000	299,000	Newark....	137,000	105,000
St. Louis...	400,000	310,000	Milwaukee	130,000	71,000
Boston.....	360,000	250,000	Louisville..	120,000	100,000
Baltimore...	350,000	267,000	Detroit	119,000	79,000
Cincinnati..	250,000	216,000	Providence	104,000	68,000
Washington	160,000	110,000			

A number of changes in the scale has taken place. Chicago, that stood fifth in 1870, takes the fourth rank; in fact, changes places with St. Louis. The same with Boston and Baltimore.

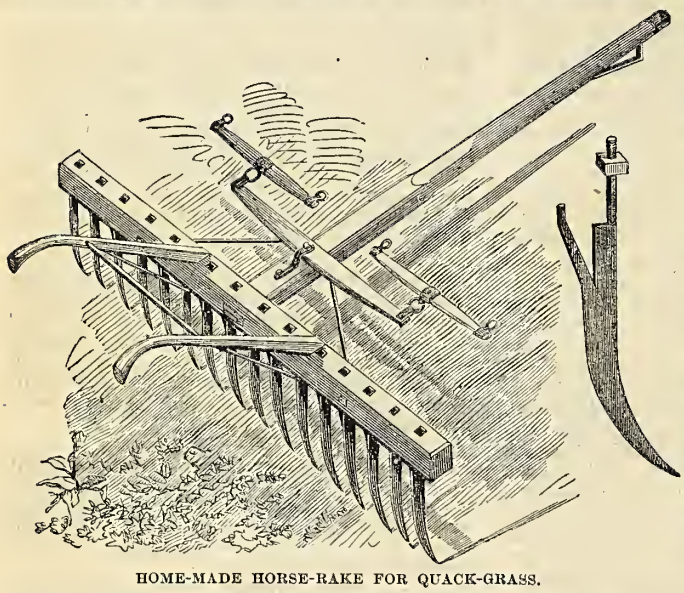
Riparian Rights.—"D. K.," Rhode Island. The term comes from the Latin *ripa*, a river bank, and in law refers to the privileges and rights of persons owning land along rivers and streams. It would take too much space for us to give even an outline of the subject, as there are the rights in common law and their modification by the laws of different States. A very good idea of the matter may be obtained by reading the article under the above heading in the 14th vol. of the American Cyclopædia.

Points or Shoes to Wheat Drills.—Whoever claims to increase the yield of wheat from the same amount of seed will be very sure to receive attention. The seed wheat, as it is put into the ground from the ordinary drill, lies in narrow strips about an inch wide. If the same amount of seed could be so placed as to occupy a strip three or four times as wide, it is evident that the plants will have more room, and that their early development, taking place without crowding, will be more vigorous, and the plant better prepared to give its yield of grain. J. A. Jones, Wilmington, Del., makes a Drill Point of his own invention, which may be attached to any drill in place of the points of the old style. These points are so constructed as to run steady and level, forming a flat-bottomed furrow from 3½ to 5 inches wide, and to scatter the seed over the whole width. This is a matter deserving the attention of wheat growers.

Overstocking the Farm.—There is such a thing as keeping more than a profitable number of cows or sheep upon a farm. A half dozen half-starved cows will not yield as much milk as three that have all the food that they want. If there is no more stock than can be well kept the returns will be the greatest in money, and also in the satisfaction of seeing the animals in a good, healthy condition—no small part of the income to one who loves to have good stock well kept upon his farm.

Quack Grass: How Subdue It.

"W. A.," Fort Atkinson, writes; "Will you kindly tell me whether there is any way of ridding a piece of land of Quack-Grass. I have a piece in corn this year, but cultivation only seems to spread it, and make it worse." This complaint is but one among many, and we make a general reply. The grass in question (*Triticum repens*), has a number of common names, among which are Quick-, Quitch-, Twitch-, Quack-, and Couch-Grass. If the grass has taken complete possession of the ground, forming a tough mass of "roots," there is only one way of ridding the soil of it. The ground should be plowed as deeply as possible in fall, so that most of the "roots" may be loosened, and turned up. Leave the land thus plowed until spring, then go over it with a cultivator every two weeks, until time to sow buckwheat. So soon as the buckwheat is harvested, begin cultivating again, not allowing the Quack-grass to make any start to grow. After cultivating each time in autumn, the ground should be raked to remove the "roots" of the grass that have been loosened and left on the surface. A rake for this purpose is shown in the accompanying engraving. The head is made of a piece of hard wood, 4 inches square, and 5 feet long, in which a tongue is set and braced. A pair of old plow handles complete the wood work. The teeth, of iron, should be 1½-inch wide, by ¾ thick, made somewhat scythe-shaped, and provided with a shoulder brace, and nut and screw. The position they take in the head-piece is shown in the engraving. With this implement, the "roots" of the Quack-grass can be gathered rapidly into windrows, after which they can be raked into heaps, and carted off to a safe place, where they may dry and be burned or rot into manure. For a small patch, a potato hook will serve the same end, in removing the "roots" from the soil.



HOME-MADE HORSE-RAKE FOR QUACK-GRASS.

Saving an Historic House.—A pint or less of water applied at the right instant will stop a conflagration that a few minutes later can not be subdued by the most powerful steam fire engine. An illustration of this was afforded not long ago at the College of William and Mary, Williamsburg, Va. The President's house was erected in 1732, and being accidentally destroyed by the French troops in 1781, was rebuilt by Louis XVI. out of his own private funds. This dwelling accidentally caught fire on the roof from a burning chimney. The roof, being a French one, is very steep and difficult to reach, but fortunately one of the neighbors had one of Whitman's Fountain Pumps which enabled him to throw a small stream just where it was needed and the building was saved. In this case there was an abundance of water, and of assistants, but these were of less use in subduing the fire than a small quantity of water sent to the right spot by this excellent little hand engine.

"Which is the Best Grain Drill?"—A question like this, in regard to the various kinds of farm implements, is frequently asked us, and is very difficult to answer. In the present case, it is impossible for us to say which grain drill is the best. The agent for the "Farmer's Favorite" will claim that his is superior. The "Champion" men will bring up all the arguments in favor of their drill, and the "Hagerstown" and "New Gearless Buckeye" will have their advocate, while one who has used the "Victor" will be warm in its praises. The fact is that each one of the leading drills is so nearly perfect that it is a very difficult task to decide which is best, it being largely a matter of taste and of preference through acquaintance with a particular pattern. With these, as with other farm implements, it is better, other things being equal, to purchase of the one made nearest home, or the most accessible, so that should a part be broken, or otherwise out of order, it can be replaced with the least possible delay.

Pot-Grown Strawberry Plants.—For the benefit of those who would establish a fruiting bed in the shortest possible time, and are willing to take the trouble, we described some twelve or fifteen years ago the method of layering strawberries in pots. This method has since been adopted by the nurserymen, and nearly every one who deals in strawberry plants at all offers those that are "pot-grown." As some of our correspondents do not seem to understand the matter, we explain. The strawberry plant is propagated by what are called "runners." A runner is a long very slender branch, with a bud at the end. Ordinarily this bud rests upon the surface of the bed and strikes root; the young plant grows rapidly, as it is supplied with nourishment from the mother plant, and soon is fed by its own roots, and when it becomes established, sends out runners of its own to form other plants. If the plants from the runners formed early in the season are left where they started, they would bear fruit next year, but we wish to make a new bed elsewhere, and the young plants are taken up either in the fall or next spring and planted out. Plants thus treated, having their roots disturbed, must grow a year in their new place before they are strong enough to give a good crop. It makes little difference whether we take up such plants and make a new bed in Sept. 1880, or in April, 1881, they will require all of 1881 to become sufficiently well established in their new bed, and strong enough to give a crop of fruit. They may, and often do, bear a few berries the first year, but not enough to be desired. If, instead of allowing them to take root in the bed, we place under the runner a small pot filled with rich soil, and let it strike its roots in that, we have then what is called a "pot-grown" or "pot-layered" strawberry plant.

In practice these pots are filled with rich compost, and each one is sunk in the soil of the bed where it can be reached by the end of a runner; the runner is placed on the soil of the pot and held in place by means of a small clod or hooked stick until it strikes root. When the roots have filled the soil of the pot and need more room, the new plant is separated from the mother plant by cutting the runner, and the ball of earth is turned out of the pot and placed in a new bed, where, its roots not having been disturbed, it goes on and grows without any interruption. Plants so treated are in just the same condition with those that take root in the bed and left undisturbed, and will bear a good crop the next spring. The runners struck in pots in June and July, and planted out in August and September, 1880, will bear a fine crop in the summer of 1881. Of course such plants cost much more than those grown in the ordinary way, as the labor of producing them is considerable, but those who are in a hurry for fruit are usually willing to pay the extra price. A reference to our advertising columns will show that the leading dealers offer strawberry plants that are pot-grown.

The Eucalyptus Tree.—Notwithstanding that there are about 100 species of *Eucalyptus* recognized by botanists, one species, *Eucalyptus globulus*, the Australian Blue Gum, is generally spoken of as *the* Eucalyptus. This is due to the fact that it is more widely known than any other species, as it has been more generally planted outside of Australia than any other, as a rapid-growing timber tree. A few years ago it was claimed that this tree had the power to render malarious regions healthy, and much was said upon planting the Eucalyptus, in the daily papers as well as in the agricultural journals. The *American Agriculturist* stated at the beginning of this excitement that the tree would not be hardy in any of the Northern States, but papers which should have known better continued to set forth its alleged anti-malarial properties, and it was only after there had been many disappointing failures that the excitement subsided. We were surprised to find the subject revived, and the planting of Eucalyptus advocated anew by a journal so generally well advised in such matters as the *N. Y. Evening Post*, which, in an otherwise well-considered article on "Trees in the Streets," in its issue of July 10th, has the following:—"The Eucalyptus is said to be a safeguard against malaria; and in that case parts of Manhattan which are notoriously infested by malarious disease might be fringed with this tree to infinite advantage." It might be of "infinite advantage" to fringe other "parts of Manhattan" with orange trees or with pine-apples, and either would succeed about as well as the Eucalyptus. It is a matter of regret that this subject has been revived, and that by a journal of influence. It should be generally understood that this Eucalyptus is barely hardy in Georgia, and that it will not succeed north of that State anywhere on the Atlantic slope. On the Pacific coast the conditions are favorable, and it has been extensively planted, and with remarkably successful results as to rapid growth. Whether there is any real foundation for the belief in its anti-malarial powers is doubtful. If the tree does prevent malaria, it is impossible for the people of Manhattan or other northern localities to avail themselves of its powers, as it will not survive a single winter in the open air. Indeed, the tree, so far as the climate of New York is concerned, cannot be regarded as half hardy. Having a tree in the grounds that had grown too large to return to the greenhouse on the approach of winter, we, by way of experiment, carefully protected it with a covering of straw. Though the following winter was a mild one, it was in spring found to be thoroughly dead, root and branch.

Potato Bugs Valuable.—It's just our luck! Yesterday we wished to try a new remedy, and found that there was not a bug on the potatoes, and we rejoiced. To-day we learn that potato bugs have a market value, and, of course, we have none! It must be true, for it is in print! A man in Queens Co., Md., tried burning his bugs, and didn't like it; then he tried boiling, and made the great discovery that the pot-liquor would dye leather and linen a brilliant crimson. More than that, the goods, after dyeing, were stronger than before. As we read these wonderful things, we thought we might raise some bugs, but some one has got ahead of us on that, and even the boys are engaged to pick 'em. There is a company that will go into the dyeing business. They have engaged 10,000 quarts of bugs at six cents per quart, and expect to want more. The bugs must be kept alive until the company is ready to begin operations—that is, they mustn't die until they are wanted to dye, and the company has erected a building in which to feed the bugs. The beauty of a hoax of this kind consists in keeping just within the limit of probability, but this is a very clumsy piece of humbuggery, quite overdoes it, and breaks down of its own weight.

Altitudes.—"J. S.," Salt Lake City, Utah—The barometer is used to take altitudes with the greatest accuracy, but as you only wish to do so approximately, you may find the boiling point of water to answer your purpose. It is a well-known fact that water boils at a lower temperature when the pressure of the atmosphere is diminished. Another fact is, that the higher the altitude the less the pressure of the atmosphere. As we ascend a mountain, water boils one degree lower for every 550 feet we go up. With an accurate thermometer and a contrivance for boiling water, you can come very near the altitude. We doubt if there is any satisfactory answer to your other question.

Clean Fruit Baskets.—J. R. Hawkins, Mountainville, N. Y., thinking that many fruit cups and baskets are not improved for future use, by being taken to hospitals, and being kept for a while in sick rooms, and considering that these receptacles are rarely returned in a clean state, sends with his fruit a card insisting that the cups and baskets be sold with the fruit, and he will supply new ones with each shipment. The great trouble in this matter is, that people do not want the cups, etc. The majority of those who buy berries take a basket to market and have the contents of the small packages emptied into it. It seems a matter more easily arranged with the consignee or retailer than with the customer.

A Farm Forge.—A farm without an anvil, a vise, blacksmith's tools, etc., is not thoroughly equipped for its best and most economical work. To these tools there should be added one of the small forges that have been so much improved of late, and are now so perfect in their action and handy in the farmers' blacksmith shop. These forges are so cheap that they are within the reach of all, and, if proper use is made of them, will pay for themselves in a very short time. As the use of a forge means the presence of a fire, it is important that they be used with due caution.

Grass Named.—H. M. Charlevoix (no State)—The grass of which you wish the "name, history and use" is Orchard grass, *Dactylis glomerata*. If by its "history" you refer to its origin, we may say that it was introduced from Europe. Its use is as a meadow grass, it being by many preferred to Timothy, by itself or to sow with Clover. It should be sown very thickly, as otherwise it tends to form clumps or tussocks; thick seeding also makes the foliage finer. The seed is kept by seedsmen.

"Just the Thing I Wanted,"

says a subscriber who has already received and thoroughly tested one of the new **Beach's Folding Fret Saws.** He says: "It does its work so well, is so handy to use, is so strong, stands so firmly, and then folds so quickly and so closely that it is out of the way in a minute. Then it is so cheap, and mine cost only 30 cents for bringing it 98 miles. I would not take $10 for it if I could not get another. I want to thank the Editors of the *American Agriculturist* very much for taking hold of it, and bringing it before their readers. I hope every boy and man will have one."....This is talking pretty strongly, but not more so than the apparatus deserves. A good many others talk in the same way. In answer to letters of inquiry, we answer that it runs true and steady; that the table is tilted very easily by simply turning a screw, that is, the table holding the wood to be sawed can be inclined to one side or the other, so that the Saw will cut at any desired angle, for beveling. The Saw cuts so smoothly that inlaid work is very beautifully made, even to very fine lines. The Saw is strained or kept tight by the simple action of the two arms. (See description and engraving on page 257, last month.) A great commendation is, that with all its advantages, the whole apparatus is supplied (cased for carriage) for the low price of $2.25, and it folds so closely as to cost but little for carriage, and requires very little room for storage when not in use. Those who prefer to save the price ($2.25), can obtain one as a *Premium* for sending *four* subscribers to the *American Agriculturist* at $1.50 a year, or *eight* subscribers for half a year at 75 cts. Subscriptions can begin at any time—though it is preferable to begin July 1st or January 1st. We can always send back numbers from January 1st, 1880, or any desired numbers or volumes for twenty-three years past, as we keep electrotype plates for printing from. Old or new volumes or numbers are at the same price.

"Little's Chemical Fluid" is the name of a sheep dip that has been much used in England, and has found favor with those who have tried it in this country. It is free from arsenic and other mineral poisons, being largely composed of those coal tar products that are well known to be destructive of insect life.

Mending Tin and Other Ware.—The use of a "soldering iron" is one of the accomplishments that every boy may easily acquire, and should he afterwards live in the country or elsewhere, at a distance from a tinsmith, he will find frequent occasion to use his skill. There are several contrivances to aid those who cannot use the soldering iron in mending tin-ware. One of these, the "solder-wire," was noticed several months ago, another, suited to mending larger holes, is called the "Copper Patch Plate." This is a sheet of copper, thin enough to be easily cut with ordinary shears; one side of it has a rather thick coat of solder, over which is a film of rosin. To mend a hole in a pan or other vessel, a patch is cut from the plate, enough larger than the hole to extend for some distance all around it. The surface to which the patch is to adhere being scraped clean, that is put in its place, and a heated poker or other iron is held upon it until the solder melts and adheres to the surface of the vessel. To make a good job, take care to fit the patch well to the surface, so that it touches in every part; scrape the surface bright and clean, and do not touch and soil it before the patch is in place.

Beautiful Iron Work.—The catalogue of the Racine (Wis.) Iron Works is a most interesting pamphlet, as it shows the great perfection that has been reached by our iron founders. This company makes a vast number of wares used in window gardening, such as Brackets, Pot Stands, Window Boxes, Ferneries, etc., in which tasteful design increases their beauty without detracting from their utility or increasing their cost.

Milk Cans—Keep Clean.—Much of the success of many in butter-making depends upon the thoroughness with which they cleanse their milk cans, pails, pans, etc., in fact, all the utensils that are in any way connected with the milk and cream. Some persons cannot make good butter, because they are careless in all the operations.

Invalid Chairs.—The best place for a very sick person is the bed, but the convalescent finds a change to a chair of some kind, especially one of the modern invalid chairs, is a great relief. It often happens that a sprain, or it may be a rheumatic attack, or other trouble, will interfere with the locomotion of one who is not otherwise disabled. In such cases a chair in which one can propel himself about by the use of the hands is a great convenience. Cases like these, not to mention the many in which the person is permanently crippled, have led to the invention of a great variety of chairs which are known by the general term of "Invalid Chairs." These often show much ingenuity in their propelling arrangements, as well as in their adjustments, which allow of a change to a great variety of positions according to the desire of the occupant. No chairs of this kind have had a greater popularity than those made by Herbert S. Smith, a concern which father and son have advertised in the *American Agriculturist* these many years. This is the only establishment in this country, and probably the only one in any country that devotes itself to making such chairs exclusively. Where these are the only wares made, one is likely to find a greater variety, and also to get styles to suit particular cases, than where the work is only a part of a general furniture business.

Nuts and Nubbins.

Hard to beat—an old carpet.

A floral swell—the dande-lion.

Something gnu—a horned horse.

Do ships on speaking terms lie to.

Spring holds the rains this season.

The king of Greece—Oleomargarine.

Lap of luxury—when the cat gets cream.

A plant that flourishes in winter—The cow-slip.

An undertaker gets a living where another man dies.

A gentleman named his dog Penny, because it was one sent to him.

Cats have no fixed political belief. They are usually on the fence.

A man is like an egg. You can not tell whether or not he is good until he is "broke!"

An advertisement for a "saddle-horse for a lady of about 950 pounds" is going the rounds.

We hear of men sowing wild oats, but whoever heard of a woman sowing anything but tares?

A Western paper heads the marriage of a bachelor of 57 years, "Another Old Landmark Gone."

"Another old settler gone!" exclaimed the cook when she tossed the egg-shell out of the coffee-pot.

"Look out for the locomotive when the bell rings," is painted in large letters, so that he who reads may run.

A Merlden man has a Bible 142 years old. Strange how long a Bible may be made to last by temperate usage!

"Gentleman," said a farmer, writing to the chairman of an agricultural society, "put me down on your list of cattle for a calf."

Artemus Ward once began a lecture by saying: "Ladies and gentlemen, I possess a gigantic intellect, but I haven't it with me."

Some females have just been arrested in Kentucky for the manufacture of illicit whiskey. This is the first recorded instance of a woman keeping still.

Wife: "But, my dear, I shall catch cold coming down so late to let you in."—Husband: "Oh, no, my love, I'll rap you up well before you come down."

A husband telegraphed to his wife: "What have you for breakfast, and how is the baby?"—The answer came: "Buckwheat cakes and the measles."

One of the saddest and most vexatious trials that comes to a girl when she is married is that she has to discharge her mother and depend on a servant girl.

Photographer: "Now, sir, if you'd look a little less as though you had a bill to meet, and a little more as if you'd been left a legacy, you'll be a picture."

If the deacon will pass the contribution-boxes around on the sidewalks they may be able to scatter the crowds of loafing young men who stand in front of churches.

Young ladies who wish to have small mouths are advised to repeat this at frequent intervals: "Fanny Finch fried five floundering frogs for Francis Fowler's father."

A couple of reporters spent the night in a cell with a man who was doomed to be hanged in Connecticut recently, and in the morning the prisoner was perfectly willing to die.

An Irishman who stood for a long time looking at a ship's anchor was ordered away, but refused to go, saying: "Divil a bit will I stir till I see the man that's going to use that pick."

"What is worse than freckles?" asks the *New Haven Register*. "Corns. They don't show much when you're dressed up, but then if you keep straight, no fellow can step on your freckles."

Patient—"Yes, sir; you are an ignorant blackguard, sir." Homœpathic M.D.—"Well, sir, then you've come to the right person for treatment, as, according to our theory, 'like cures like.'"

An ingenious observer has discovered that there is a remarkable resemblance between a baby and wheat, since it is first cradled, then "thrashed," and finally becomes the "flour" of the family.

A little girl who had often heard her mother speak of her father, who was quite bald, as being a self-made man, asked her one day, if her father was a self-made man, why he didn't put more hair on his head.

In struggling to make a dull-brained boy understand what conscience was, a teacher finally asked: "What makes you uncomfortable after you have done wrong?"—"Father's leather strap," feelingly replied the boy.

At an examination for admission to the bar, the question was asked: "What is the rule in Shelley's case?"—One of the class answered: "It is the same as in any other man's case. The law is no respecter of persons."

A little girl, aged three, went to church lately to see a christening. When, on her return, she was asked what she thought of the baby, she replied: "It was a good baby, it did not cry when the gentleman washed its head."

It is said that a young lady in Penn Yan, N. Y., wears twelve diamond rings on one finger, and the *Norristown Herald* thinks she should also wear a gold band around her head to prevent the crack in her skull from widening.

Smith to Brown, going home from the club in the small hours of the morning: "It's awfully late, Brown; what'll you say to your wife?"—Brown: "Oh, not much; good morning, my dear, or something of that sort; *she'll say the rest.*"

An Illinois youth, husking corn in a field near the railroad, saw a new locomotive, with a red smoke-stack. He became frightened, and ran to the house crying: "That 'ere engine is going to bust, sure; it's red-hot clean to the top of the stovepipe."

A young lady who read that it is lucky to pick up a horse-shoe, happened in a blacksmith shop the other day, and picked up one just made. The surprising suddenness and piercing shriek with which she dropped it showed that it was more than simply lucky.

"Is this my train?" asked a traveller of the Kansas Pacific Railroad depot lounger.—"I don't know, but I guess not," was the doubtful reply. "I see it's got the name of the railroad company on the side, and I expect it belongs to them. Have you lost a train anywhere?"

A small boy, boasting of his father's accomplishments, said: "My father can do almost anything; he's a notary public and he's an apothecary, and can mend teeth, and he is a doctor, and can mend wagons and things, and can play the fiddle; he's a jackass at all trades."

"Do you see that spring over there?" said a settler in Arkansas to a stranger. "Well, that's an iron spring, that is; and it's so mighty powerful that the farmer's horses about here who drink the water of it never have to be shod. The shoes just grow on their feet nat'rally."

An Englishman at a hotel in New York asked the clerk if there were "oysters in the hotel."—"Oh, yes, was the answer; "step right in the restaurant; we don't keep them in the office."—"Egad!" said Mr. John Bull, "I think you misunderstand me, you know; I mean a 'yster, don't you know, a 'lift'—a 'hellevator' may be you call it in this country."

The people of a New Hampshire town are so fearfully lazy that when the wife of a minister who had just settled in that town asked a prominent citizen if the inhabitants generally respected the Sabbath and refrained from business, replied: "Confound it, ma'am, they don't do enough work in a whole week to break the Sabbath, if it was all done on that day."—*Post.*

"Bub, did you ever stop to think," said a grocer recently, as he measured out half a peck of potatoes, "that these potatoes contain sugar, water, and starch?"—"Noa, I didn't," replied the boy, "but I heard mother say you put peas and beans in your coffee, and about a pint of water in every quart of milk you sold." The subject of natural philosophy was dropped right there.

The other day a farmer met a friend, who asked him how prospects were out in the country.—"This dry weather is just killing everything," was the doleful reply.—Some hours afterward a storm of rain broke over the city, and as the farmer ran in and out of the wet his friend said: "This will do good out your way."—"May be, may be," said the farmer, "but it's mighty rough on them's got hay out to-day."

A clergyman asked his Sunday-school: "With what remarkable weapon did Samson at one time slay a number of Philistines?"—For a while there was no answer; and the clergyman, to assist the children a little, commenced tapping his jaw with the tip of his finger, at the same time saying, "What's this? what's this?"—Quick as thought, a little fellow innocently replied, "The jaw bone of an ass, sir."

As P. T. Barnum was selecting a turkey in one of our markets, the owner drew his special attention to a large fat gobbler. Suspecting it was an antediluvian, Mr. Barnum said, with a smile, "What do you sell that old gentleman for?"—With an air of triumph the owner replied, "I sell him for a profit."—"A prophet! Oh, I supposed he was a patriarch," was the quiet response. The study of sacred history terminated.

Little Edith—"Mamma, and you think if a person is really and truly in love, it would be wicked to deprive her of the object of her affections?"—Mamma: "Why, certainly, Edith, dear; but where in the world did you learn all that?"—Edith: "I heard you tell it to Mrs. Jinglejaw to day. And, mamma, I'm awfully in love with that loaf of cake in the cupboard." Edith and the object of her affections were immediately united.

Three Irishmen, who had dug a ditch for $4, were quite at a loss to know how to divide the pay "aqually." But one of the number had gone to school, and reached division in the arithmetic, so it was left to him. He did it at once, saying: "It's alsy enough. Shure, there's two for you two, and two for me, too." The two received their portion with a greatly increased respect for the advantage which learning gives to a man.

A sad looking man went into a Burlington drug store. "Can you give me," he asked, "something that will drive from my mind the thoughts of sorrow and bitter recollections?" And the druggist nodded and put him up a little dose of quinine, and wormwood, and rhubarb, and epsom salts, and a dash of castor oil, and gave it to him, and for six months the man couldn't think of anything in the world except new schemes for getting the taste out of his mouth.

Mr. C——, pastor of a certain church, had been on very bad terms with his flock for some time. Before his contract with the parish expired, he was appointed chaplain at the state prison. Elated at getting rid of him, the congregation came in full numbers to hear his farewell sermon. Great was their astonishment, when the reverend gentleman chose for his text the following words: "I go to prepare a place for you * * * that where I am, there ye may be also."

Patrick saw a bull pawing in a field, and thought how amusing it would be to jump over, catch him by the horns, and rub his nose in the dirt. The idea was so funny that he laughed to think of it. The more he thought of it, the funnier it seemed, and he determined to do it. Boy as quickly tossed him over the fence. Somewhat bruised, Patrick leisurely picked himself up, with the very consolatory reflection: "Well, it is a mighty foine thing that I had my laugh afoorst."

"Prisoner at the bar," said the judge to the man on trial for murder, "is there anything you wish to say before sentence is passed upon you?"—"Judge," replied the prisoner, solemnly, "there has been altogether too much said already. I knew all along somebody would get hurt if these people didn't keep their mouths shut. It might as well be me, perhaps, as anybody else. Drive on judge, and give us as little sentiment as you can get along on. I can stand hanging, but I hate gush."

"William, do you know why you are like a donkey?"—"Like a donkey?" echoed William, opening his eyes wide; "no, I don't."—"Do you give it up?"—"I do."—"Because your better-half is stubbornness itself."—"That's not bad. Ha! ha! I'll give that to my wife when I get home."—"My dear," he asked, as he sat down to supper, "do you know why I am like a donkey?"—He waited a moment, expecting his wife to give it up, but she didn't. She looked at him somewhat commiseratingly as she answered: "I suppose because you were born so."

A well-dressed lady called at a carpet warehouse and asked to look at some carpets. The goods were shown, every pattern in the shop being spread out for examination. After looking at everything about the place, and driving some very close bargains in the matter of price, the lady selected a carpet for each room in her house, running up a bill which filled the salesman's heart with joy. When all was completed, he asked where the carpets were to be sent. The lady replied, without hesitation, that she would call and let him know. "You see," she added, "my husband has just bought a piece of ground, and talks of soon building a house on it. If he does, you know, I shall want some new carpets, and then I will call and order these, as I know the cost."

PIGS.

Our choice **Chester White, Berkshire, Yorkshire, Jersey Red, Poland-China,** and **Essex Pigs** of all ages was never finer, at the same time our prices are **unusually low. Also EXTRA COTSWOLD and SOUTHDOWN LAMBS,** yearlings and 2-year olds. A number of **fine yearling Bucks LOW.** Do not fail to write us before purchasing. Illustrated Catalogue mailed on application.
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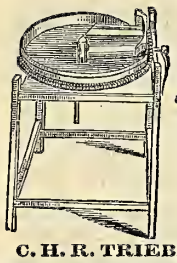

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Won **First Premium** at the American Institute Fair, New York, in 1878; at the Fair of the Penn. State Agricultural Society in 1879; at the Dairyman's Fair at Delhi, N. Y., in 1879, and at County Fairs innumerable. Acknowledged to be the **only self-feeding and reliable machine in the market.** Descriptive circular sent free.

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Cheapest and Best. No inside fixtures, and *always reliable.* Six sizes of each kind made. Three sizes of the *Lever* Butter Worker made. Best material used, and every Churn and Butter Worker *warranted* exactly as represented. One Churn at wholesale where we have no agent. *Send Postal for Circulars.* AGENTS WANTED.

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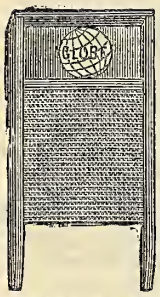
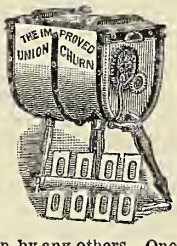
THE GLOBE WASHBOARD AND THE IMPROVED UNION CHURN





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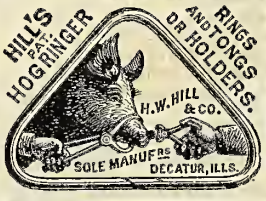

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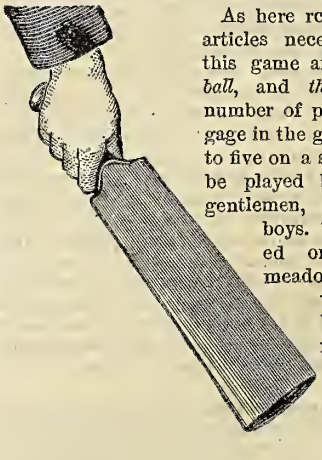
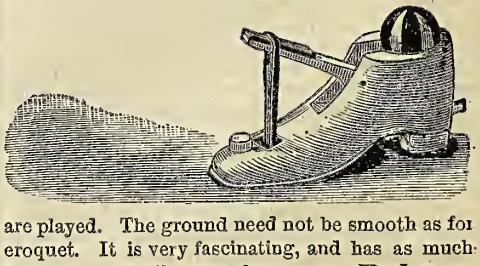


As here represented, the articles necessary to play this game are *one bat, one ball,* and *the trap.* Any number of persons can engage in the game, from one to five on a side, and it can be played by ladies and gentlemen, or girls and boys. It can be played on the lawn, meadow, or any place where base-ball, lawn tennis, or croquet



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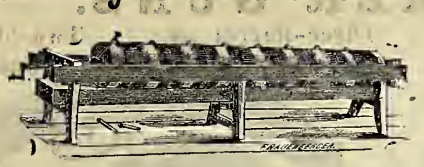

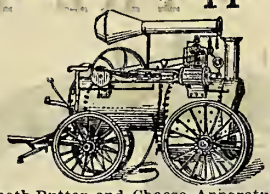

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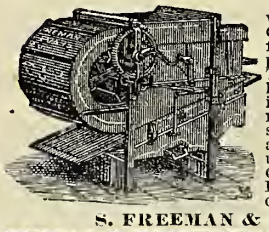

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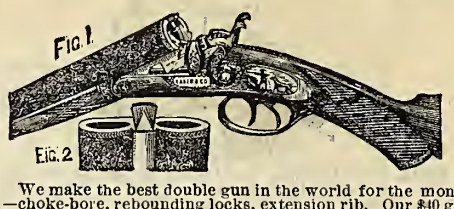

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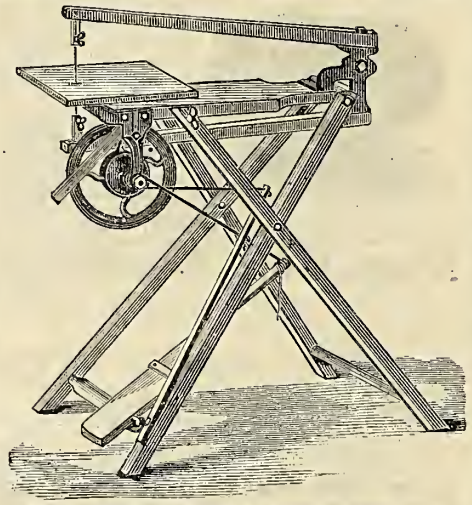

Fig. 1.—BEACH'S FRET SAW READY FOR USE.

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by which is secured stronger, better working machines; a material reduction in price, and a great saving in cost of carriage or delivery, as well as in storage room when not in use, with sundry other improvements and advantages.—All the above are secured in

Beach's New Folding Fret Saw.

Figure 1 shows it ready for use, while in half a minute or less it can be folded (*without removing the saw*) to the form, figure 2, occupying but a quarter of the space, to be set away, or put in a small box for sending anywhere at small cost for carriage. By a simple arrangement the table is lowered to a convenient working hight for a boy of 5 or 6, or raised high enough for the tallest man, and at every hight it stands *firmly*.

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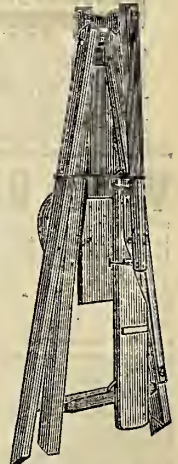

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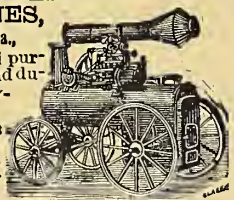

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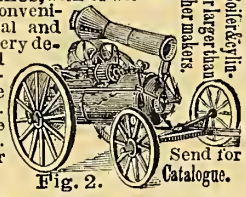

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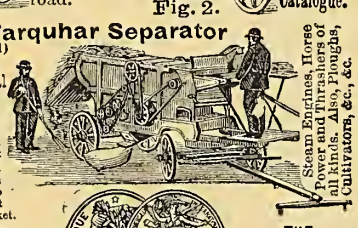

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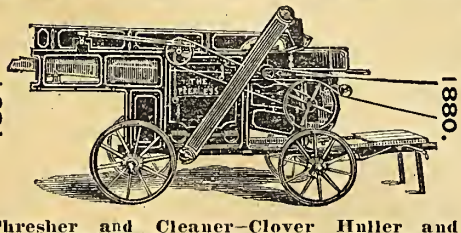

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FOR THE FARM, GARDEN & HOUSEHOLD.

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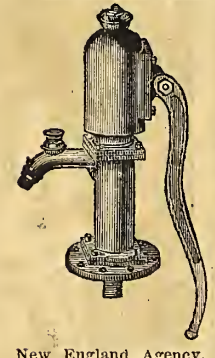

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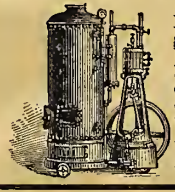

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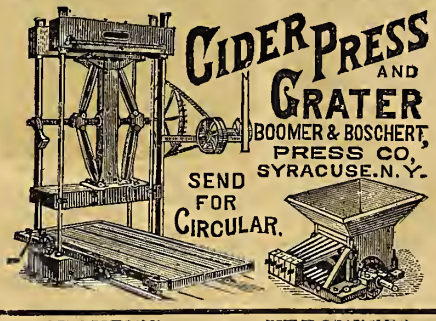

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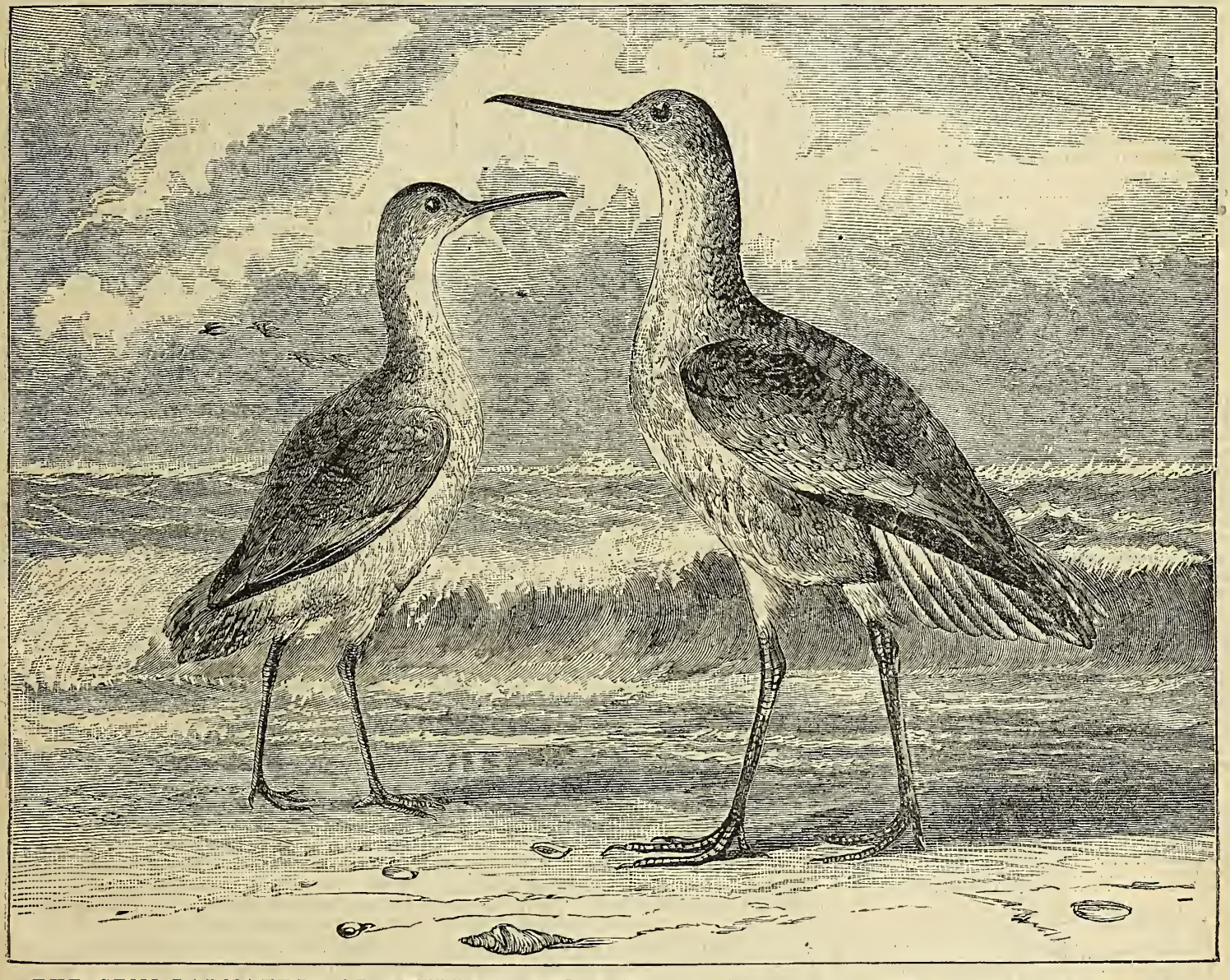

THE SEMI-PALMATED, OR "WILLET" SNIPE (*Totanus semipalmatus*).—*Drawn and Engraved for the American Agriculturist.*

In the Middle States the species of *Totanus* shown in the accompanying engraving is known to every coast hunter as the "Willet," or "Willet Snipe."

This common name is derived from the peculiar note, *will-willet* or *will-will-willet* which the bird produces when rising for flight. Farther south this snipe is generally known as the "Stone Curlew." The "Willet" is seldom met with far inland, it preferring the sea coast, and especially that portion in the vicinity of large rivers. During the breeding season it is very generally found from the mouth of the Mississippi to New York, and occasionally as far north as Boston. In autumn it returns to the coast of Georgia, Florida, and the Gulf States, where it spends the Winter in the extensive salt marshes that abound in that region. It also occurs to some extent on the western coast. In the Middle States—New Jersey, Delaware—the "Willets" make their appearance about the fifteenth of April and begin to breed a month later. They retire to the seclusion of the large salt marshes where they can build their nests and raise their broods of young in comparative security.

The nest is upon the ground and built out of the coarse herbage of which the rank marsh grass affords an abundance. The eggs are usually four in number, measuring two inches in length by one and a half in breadth, and are much flattened at one end. During the mating season the birds are unusually noisy, filling the air with their sharp cries, but later they brood in silence, unless disturbed. "Both birds incubate, sitting alternately day and night. The young run about on leaving the shell and are carefully fed by their parents."—The food of the "Willet" consists of small crabs, fiddlers, aquatic insects, etc., which they secure largely by probing in the mud bars with their long bills. This Snipe is at all times a shy and wary bird, and to be approached by the hunter with the greatest caution. The sight of a gunner produces the greatest alarm in the birds, which rise on the wing and give out loud angry cries, constantly endeavoring to allure the hunter away from the spot where their nest and young are concealed. Audubon's method of hunting them was to employ a well trained dog, and to conceal himself in the tall herbage of the marsh. The birds will fly not far above the dog and follow him, so that when the dog approaches the hunter the birds are taken on the wing. But this cannot be long continued as the birds will soon fly away to some place of safety.

The plumage of the "Willet" is soft, and a mixture of brown, black, and white; the back is a brownish gray; the breast being white; the bill, feet, and legs, are light blue; the wings long and acute; the tail short and made up of twelve rounded feathers. They have a summer and a winter plumage which differ considerably; the former is shown in the engraving. The males are smaller than the females, the former averaging seven ounces, the latter ten ounces. In the engraving the female is in the foreground, and therefore the contrast in size is apparently somewhat exaggerated.

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Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon			N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois.			Washington, Maryland, Virginia, Kentucky, Missouri, and California.		
		Sun rises.	Sun sets.	Moon rises.	Sun rises.	Sun sets.	Moon rises.	Sun rises.	Sun sets.	Moon rises.
		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	W	5 25	6 35	2 13	5 27	6 33	2 18	5 29	6 31	2 22
2	T	5 26	6 33	3 16	5 28	6 31	3 20	5 30	6 29	3 24
3	F	5 27	6 31	4 20	5 29	6 30	4 23	5 31	6 28	4 25
4	S	5 28	6 30	sets	5 30	6 28	sets	5 32	6 26	sets
5	S	5 29	6 28	6 32	5 31	6 26	6 33	5 33	6 25	6 34
6	M	5 30	6 26	6 57	5 32	6 25	7 0	5 34	6 23	7 3
7	T	5 31	6 24	7 27	5 33	6 23	7 31	5 34	6 22	7 35
8	W	5 33	6 23	8 2	5 34	6 21	8 6	5 35	6 20	8 11
9	T	5 34	6 21	8 43	5 35	6 20	8 54	5 36	6 18	8 55
10	F	5 35	6 19	9 33	5 36	6 18	9 40	5 37	6 17	9 46
11	S	5 36	6 17	0 33	5 37	6 16	10 39	5 38	6 15	10 46
12	S	5 37	6 16	11 41	5 38	6 15	11 47	5 39	6 14	11 53
13	M	5 38	6 14	morn	5 39	6 13	morn	5 40	6 12	morn
14	T	5 39	6 12	0 53	5 40	6 11	0 58	5 41	6 11	1 3
15	W	5 40	6 10	2 7	5 41	6 10	2 11	5 41	6 9	2 15
16	T	5 41	6 8	3 21	5 42	6 8	3 23	5 42	6 7	3 26
17	F	5 42	6 7	4 33	5 43	6 6	4 34	5 43	6 6	4 35
18	S	5 43	6 5	rises	5 44	6 4	rises	5 44	6 4	rises
19	S	5 44	6 3	6 9	5 45	6 3	6 12	5 45	6 2	6 14
20	M	5 45	6 1	6 38	5 46	6 1	6 41	5 46	6 1	6 45
21	T	5 46	6 0	7 9	5 47	5 59	7 14	5 47	5 58	7 18
22	W	5 47	5 58	7 45	5 48	5 58	7 50	5 48	5 57	7 56
23	T	5 49	5 56	8 24	5 49	5 56	8 32	5 49	5 56	8 38
24	F	5 50	5 54	9 12	5 50	5 54	9 02	5 50	5 54	9 25
25	S	5 51	5 53	10 4	5 51	5 53	10 10	5 51	5 53	10 16
26	S	5 52	5 51	11 0	5 52	5 51	11 6	5 51	5 52	11 12
27	M	5 53	5 49	morn	5 53	5 49	morn	5 52	5 50	morn
28	T	5 54	5 47	0 2	5 54	5 48	0 5	5 53	5 49	0 10
29	W	5 55	5 45	1 1	5 55	5 46	1 6	5 54	5 48	1 10
30	T	5 56	5 44	2 5	5 56	5 44	2 8	5 55	5 46	2 11

PHASES OF THE MOON.

MOON.	BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	D. H. M.	H. M.	H. M.	H. M.	H. M.
New M'n	4 0 8 ev.	11 56 mo.	11 44 mo	11 32 mo.	11 2 mo.
1st Quart	11 1 41 ev.	1 29 ev.	1 17 ev.	1 5 ev.	0 35 ev.
Full M'n	18 10 45 mo.	10 33 mo	10 21 mo	10 9 mo.	9 39 mo.
3d Quart.	26 6 21 mo.	6 12 mo.	6 0 mo	5 48 mo.	5 18 mo.

AMERICAN AGRICULTURIST.

NEW YORK, SEPTEMBER, 1880.

Hints for the Work of the Month.

[*The Hints and Suggestions in these columns are never copied from previous years, but are freshly prepared for every month, from the latest experience and observations, by practical men in each department.*]

Sowing Fall Grains.—The leading farm work for this month in many localities is the sowing of the fall crops. One can not expect that the best harvest will follow a careless preparation of the soil, and an imperfect sowing of the seed. The young plants should get well rooted before winter sets in, and in order to insure this, the soil should be deep and mellow. Wheat requires a soil well pulverized, but compact, with fine tilth of the surface, for a seed-bed. There may be lumps on the surface of the soil, but the seed should not be surrounded by them, otherwise the plants will be very uneven, and many grains will not start at all. If the soil is lumpy, as it is in many cases,

Use a Roller immediately after the plow, or after the harrow has been used once. This is the only proper use of the roller on fall sown fields. To roll the ground after the grain is sown is a mistake; it gives to the surface a smooth and pleasing appearance, but it is much more inclined to crust over; besides this, the protecting coat of snow is not held in winter as it would be if the surface was left rough. Besides having the soil in a proper mechanical condition, through the means mentioned above, it must be provided with a good supply of

Plant Food.—The young plants should be well fed, that is, have a plenty of nourishment in such a condition as to be readily taken up and digested. Such food is furnished by thoroughly decomposed barn-yard manure; but when it is not to be had in sufficient quantities, some good artificial fertilizer as a superphosphate may be used with profit.

Selecting Seed Wheat.—Sow the best seed to be found, even if it costs a little more than that taken from the ordinary bin. It is a gain to pay double the market price for grain that is clean, plump, and has been grown for seed with special care. Much depends upon the variety—the Clawson at the present time is taking a high rank for yield in many localities throughout the wheat growing region.

The Hessian Fly is the most troublesome upon the early sown wheat—that sown after the 15th of this month is not generally damaged—but it makes smaller growth before winter sets in, and so far as that goes it is a disadvantage to sow late, excepting on well prepared land. A farmer of our acquaintance (in the State of New York) for many years sowed his wheat the first week in October, and his average yield has been over 40 bushels per acre. He was first led to practice late sowing to avoid the ravages of the Hessian Fly, but the practice proved so satisfactory that it was continued after the fly had disappeared. His land was in high condition, and a top-dressing of fine manure was applied to give the young plants a good start. It may be better to sow late if a thorough preparation of the soil is thereby secured.

Water Furrows.—If the land is not well drained, when all else is done in the wheat field, make the necessary furrows with the plow, for carrying off the surface water during heavy rains.

Seeding to Grass.—Grass seed may be sown a few weeks after the grain. Thrifty growing timothy will frequently retard the growth of the grain if sown as early as the wheat crop, and clover seed is best sown in the spring after or with the last snow.

Turnips should be kept free from weeds and the soil loose and mellow. Proper thinning is important; a single root needs from 9 to 15 inches in the row to grow to its best. On rich lands white turnips may still be sown and a good crop expected.

Beets and Mangels that were sown early, may be harvested this month; if left in the ground they become hollow and dry. When pulled put them in long heaps, with the tops or straw laid over them; to be afterwards covered with earth, to protect them for the winter, or taken to the root cellar. Care should be taken that the roots do not heat at any time either in the pit or cellar.

Buckwheat.—This tender crop should be cut before the first frost injures it. The grain shells badly when the plants are dry, therefore cut it in the morning when the dew is on. The cut crop after standing a few days will be dry and ready to thresh, which had best be done at once. If a machine is used, remove the concave, or the cylinder teeth will otherwise break the kernels. The grain should be cleaned at once and spread out as thinly as possible, as it is very apt to heat, and become almost worthless, if left in large heaps.

Beans are injured by heavy rains; when ready pull them and stack around the poles driven in the ground; cover the stacks with straw. In pulling, leave them in rows for a time to cure, and if rain threatens they can be gathered quickly in stacks.

Corn.—Early corn will be ready to cut this month. As soon as the grain is glazed it is ready to be harvested, and the stalks will be much more valuable than if left to be killed by frosts. The seed for next year should be selected before the cutting has begun. The tops of the selected stalks may be broken down as a mark and left standing when the others are cut and shocked.

Shocking is an important matter and should be done with care. If the stalks are not well set up and properly tied, the shocks fall in all directions and the fodder is damaged and the husking made more difficult. Bands of rye straw, or even of willow, may be used with advantage.

Potatoes.—Early ones should be dug at once; rains will otherwise start them into growth and do much injury. The last brood of "bugs" should be destroyed, as it is these that furnish the early brood next season. It is a good plan to sort the potatoes as they are gathered, thus saving much labor in handling them afterwards.

Sheep.—After the roots have been removed from the field, the sheep should be turned in that they may pick up the small, imperfect roots and the scattered leaves. This will accustom them to the change of food that must soon come. If early lambs are not desired, the rams must be kept from the ewes, or otherwise be aproned or "bratted." It is an important matter that the ewes that are to bear lambs should be well fed, and begin the winter in good condition. A little grain fed to the ewes now will do much to insure strong lambs.

Cows that are giving milk should be fed liberally,

and not allowed to fall off now, as they can not be brought up again when cold weather sets in. Some kind of feed, as bran or meal, should be used to help out the failing pastures. Corn fodder is excellent to piece out with at this season, and a patch of it should be found on every farm. It is important that the cows have a plenty of good, fresh water, especially as the herbage does not now afford the abundant juices of the spring growth.

Clover Seed.—The second crop of clover for seed can be cut with the ordinary reaper. Some prefer to attach a short frame of strips of wood covered with cloth to the cutting bar of the mowing machine, the clover being gathered upon the cloth and raked off. This makes a much lighter cutting machine. The straw and chaff are useless for hay, and need not be preserved from the weather. They may be used for litter in the barn-yard or stable.

Whitewash.—A good way of cleaning stables, sheds, etc., is to give them a coat of hot lime-wash. Make a barrel of the wash by slaking a bushel of fresh lime in a pork or other water-tight barrel, filling up the barrel after the slaking is done. A ready method of applying the wash to coarse work is to use a Fountain Pump, or other hand force pump. With one of these the whitewash can be thrown upon the walls, and into every corner and crevice, until every part is completely covered.

Machinery.—Harvesting and other farm machinery that is to be used no more for this season should be cleaned and stored away. The bright parts may be kept from rusting by applying a mixture made by melting together one pound of fresh lard and a lump of resin the size of a hen's egg, stirring as they cool. The bearings should be well wiped, and afterwards given a thin coat of castor-oil.

Sundry Matters.—Coarse herbage and weeds not in seed may be cut and placed in the barn-yard as an absorbent of liquid manure....A number of little jobs can be done now that will aid greatly in making things comfortable, and will pay a good interest upon the time invested...We again urge all to attend the fairs, doing it with the eyes open to catch any new ideas that may be of use at home. There is much to be learned if the time at the fairs is rightly employed. Make it a point to go and take the family, and, best of all, try for one or more prizes, and thus have a more direct interest in these instructive exhibitions of the products of the farm.

Notes on Orchard and Garden Work.

As already noted elsewhere, the apple crop is of almost unprecedented abundance; pears for the most part offer but a moderate crop, though the most popular variety, the Bartlett, so far as we have observed, is fairly abundant. But the grapes—they are almost equal to the apples in the bountiful yield. It seems as if we never saw wild vines so loaded in our rambles through the woods as they appear to be this year, while cultivated vines present a sight that can not fail to delight the heart of the vineyardist. This abundance may not be best for the fruit grower, but it is a grand thing for the fruit consumer.—Already, early in August, Concords were retailing on the street for 5 cts. per pound. We hope to see the time when every man, woman and child, the whole country through, can have all the grapes they can eat during the season. It is as easy to grow grapes as it is to raise corn, and those who cultivate them must make the increased quantity compensate for the low price.

Orchard and Nursery.

Apples are abundant this year, and it will not pay to market any that are not of the best quality. See the use of the bag in picking, with illustrations of the manner of emptying it in the barrel on p. 348.

Peaches.—A single over-ripe peach in the crate or basket will often make a great difference in the selling price in the market. Peaches for market should always be simply mature, but never soft.

Pears of all varieties are best when ripened off of the tree. Some varieties, such as Clapp's Favorite, are worthless if allowed to remain too long upon the tree, but if picked as soon as mature, and allowed to ripen, are among the best. In no case should the fruit be shaken from the trees. Use a picker for those that can not be otherwise reached. The fruit of the choicest larger varieties may be packed in shallow crates, each specimen wrapped in tissue paper. For general shipping, half-barrels are found the most convenient in handling.

Cider.—The early windfall apples may be utilized by making into cider, which will answer for making vinegar. The best cider can only be made from perfectly mature fruit later in the season. Those with a large orchard can profitably keep a small mill and press, and work up the apples as they accumulate; they are made of all sizes, and a small one is not costly. It should be understood that

Budding is one of the important labors of the present month. The precise time depends upon the condition of the stock. The work may be continued so long as the stocks are growing. After the buds have become firmly set the ties should be cut. That the buds have "taken," as it is termed, will be known by their remaining green and plump.

Planting.—While we are in favor of fall planting wherever the climate is favorable, it can not be recommended indiscriminately. In *all* localities where there is a long and mild autumn, it is preferable to spring planting. At this season the soil is warm and mellow, a condition favorable to the healing of bruised and cut roots and the growth of new ones. There is more time at this season that can be given to the work, which need not be hurried, and this with the better condition of the soil insures much more thorough work. The trees become established and get an earlier start in the spring, and are the better able to withstand a drouth that may come in mid-summer. The earlier trees are planted after completing the year's growth the better. A mound of earth around the base of the newly set tree serves to keep water from settling around the roots, acts as a support, and protects the base from the attacks of mice. If trees are to be set in the spring, it is best to prepare the ground now, secure the trees, and heel them in in a dry and safe place, to be in readiness in spring.

The Fruit Garden.

Blackberries and Raspberries start so early in the spring that when practicable they should be planted in the fall. *Blackcap* Raspberries, and a few varieties with red fruit, are only to be propagated from the tips of the long pendent branches. If it is intended to propagate these, some of the canes should be left uncut for the purpose. If left to themselves the new canes naturally bend over and grow downward until they reach the earth, where their tips strike root, to form new plants. In cultivation it is well to help them by placing a little earth on the ends of the canes in order that they may not be blown about by the winds.

Currants and Gooseberries may be pruned so soon as the leaves have fallen. Cuttings may be made now and planted in rows a few inches apart with one bud above the surface, taking care to press the earth very firmly against the base of the cuttings. If put in early, roots will be formed this season.

Grapes.—The scissors made for the purpose should be used in gathering, as they hold the clusters and avoid handling the fruit, which, by removing the "bloom," greatly injures its appearance, and consequently its sale. Trays should be used in which the grapes are placed and conveyed to a cool place, where they are left for a few days for the skin to harden, after which the fruit may be packed in small boxes, when it is ready for market.

Packing Grapes.—Both thin wooden and paper boxes are used, and should hold from three to five pounds. The bottom of the box is removed and the grapes laid in carefully. The box should be full enough to require slight pressure to bring the bottom in place, but not so as to bruise the fruit.

Strawberries.—Keep the old beds clean of weeds, and remove all runners not needed for new plants. The planting of new beds is given on page 354.

Kitchen and Market Garden.

As the cooler weather comes on the late crops will make a more rapid growth than during the hot and dry weather of summer. The late weeds will also grow vigorously, and there should be no relaxation of vigilance with them. When a crop is removed, the ground should be cleaned and the weeds and refuse disposed of by burning or composting. The weeds may be kept down afterwards by an occasional running of the cultivator.

Celery should be making a rapid growth now, and will need all the encouragement of clean culture and frequent stirring of the soil. If some is wanted for early use, a number of the most forward plants may be straightened up and have the earth drawn around them, increasing the banking at intervals of a week or so. This is only for present use, the winter supply should be so treated next month.

Cabbages and Cauliflowers.—Frequent use of the cultivator or hoe will promote growth. If the late plantings are backward, a little guano or other concentrated manure will be of great benefit. Seeds for plants to be kept over winter in cold frames for next spring planting, are to be sowed now. Only the early varieties are thus treated. In the vicinity of New York City, gardeners sow about the middle of the month, each one having his favorite date. If sown too early the plants will be too large for wintering, and if sown too late, they will be too small. The seed is sown in rich soil.

Corn.—A quantity should be dried for winter use. The earliest and best ears should be saved for seed. As fast as the ears are taken from the planting, cut up the stalks and feed to the stock, or cure for winter use.

Cucumbers.—Let none ripen except the few needed for seed, as it is very exhaustive to the plants. Gather for pickles every second day.

Martynias.—Gather the fruit for pickles while still very young and brittle.

Melons ripen best if they are turned occasionally.

Sweet Potatoes.—Do not allow the vines to strike root at the joints. The largest potatoes for early use may be pulled from the rows, the smaller ones being left to grow through the season.

Spinach for use next spring is sown, in the latitude of New York, between the first and middle of the month, in drills 15 inches apart.

Tomatoes.—Destroy the large worms by hand-picking. When the fruit is most abundant make a supply of catsup. Gather the green fruit before frost comes for green pickles, etc.

Turnips.—The Red-top, Strap-leaved, and other flat kinds may still be sown with hope of a good crop. Hoe and thin the earlier sown.

Seeds should not be saved from the leavings of the crop. Select the earliest and best plants and mark them for seed, giving them special attention. It is not best to save the seed of plants that will mix, as the melons, squash, corn, etc., if more than one variety is grown in the vicinity—only mongrels will result. It is cheaper to buy most seeds.

Flower Garden and Lawn.

Now that the hottest days are passed, the grass will grow more rapidly and the lawn mower will be more frequently used. Annual grasses, especially the "Finger Grass," will spring up, but as it lasts for only the season, if it does not seed it will give but little trouble hereafter.

New Lawns may be made and the grass seed sown this month. Fall sowing is preferred to that in spring if the season is favorable for its getting a good start before winter comes.

Cannas.—Both flowers and foliage should be making a fine display now. Prolong the bloom by cutting away the stalks as soon as the flowers fade.

Dahlias.—A large plant will frequently need more than a single stake to support its many spreading and flower-laden branches. Unless well supported the branches break down, just when the plant ought to be at its best. Remove the blooms as they pass their prime.

Chrysanthemums.—Coming when nearly all else is gone they deserve more general cultivation for both their lateness and beauty. If potted, they can be kept in bloom for several weeks in the greenhouse or window. Those wanted to flower in-doors

should be potted when the buds are well formed, and shaded a few days.

Geraniums should make a fine show of bloom now. Make cuttings now for next year's stock.

Ornamental Trees and Shrubs may be set out in autumn In removing evergreens the chief point is to prevent the roots from becoming dry during the operation. This is by many regarded as a favorable time of year to move them.

Herbaceous Perennials.—Fall is the best time to transplant many of these, as those like the Pæony will not bloom the same year if moved in the spring.

Greenhouse and Window Plants.

All plants to be taken in when frosts are expected, should be in readiness. The houses should also be in order for the hurried time of moving in. In bringing in the plants it is best to do it a little while before the cold comes on, in order that they may not be injured, and more time can be given for clearing of insects, etc. Begin with the most tender varieties. The house plants should go into a room where the windows can be left open, in order that they may by degrees become accustomed to the confined air of the living room.

Soil, Pots, etc., needed during the winter, are to be provided now

Seeds of Annuals, such as Candytuft, Sweet Alyssum and Mignonette may be sown. Other sowing for a succession of bloom may be made later.

Hanging Baskets may be filled now and hung on the piazza until cooler weather.

The Roses, Carnations, etc., that are to flower in winter should be taken up, potted, and put in a shady place until they recover.

Slight Frosts.—When these come early in the season provide a covering for the choicest plants by spreading sheets or even newspapers over them.

How to Clean Wash Pipes and Sink Drains.

We hardly know the value of the plumber's work which disposes of the wastes of the family, until the pipes become obstructed, and the old-fashioned slop pail has to do the work of gravitation. Then there is loud lamentation in the family; Bridget's work is nearly doubled, and the mistress is threatened with notice of early leaving. We have had an experience in this line which ought to benefit all the house-keepers among the village and city readers of the *American Agriculturist*. Nothing is more common than partial obstructions in the outlet of the wash-bowl or bath-tub, where these conveniences are fixtures in the dwelling. Hair or lint gets in and other obstructions accumulate until the water nearly stops. If a stick is used the foul matter accumulates below, and the plumber has to be sent for, and you have to pay for his skill and time in making a free passage for the water. The best thing to remove these slight obstructions is a rubber force cup, or half globe, about three inches in diameter fastened at the apex to a handle about four inches long. If this is put over the mouth of the waste pipe and pressed downward, it forces a column of air or water against the obstruction in the pipe and removes it. It will remove a slight obstruction in any part of the pipe. The cost of such a force cup is about fifty cents. We think we have saved five dollars in plumber's bills by using one of these cups, as it has been needed during the last three years. Plumbers do not like to keep them for sale for obvious reasons, but you can find them at the drug or rubber store. A more serious matter is the obstruction of the waste-pipe from the water closet and sink, usually a four-inch glazed earthen pipe emptying into the cesspool or street sewer. A recent case of this kind revealed, upon examination, an inch and a half coating of grease upon the inside of the pipe—the accumulation of a dozen years or more from the waste of the sink. This might have been prevented by the occasional use of potash or soda dissolved in hot water and poured into the waste pipe of the sink. W. C.

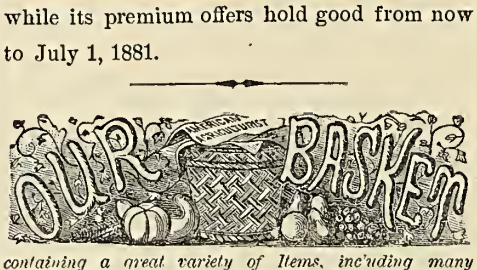
An Important Supplement.

All our readers will be interested in the large Supplement with this number, which includes the Premium List for the forthcoming volume. Attention is invited to pages 377 and 378, which explain the object of premium-giving, who may receive premiums, etc., and will answer some objections to the system.

☞Please note on page 378, the "Extra Long Year," that all *new* subscribers for 1881 coming in from *now* onward will receive the remaining numbers of this year, issued after the receipt of their subscription, *without* extra charge. ☞This offer applies to *all* new subscribers, whether in premium clubs or not. We trust our friends will take this occasion to invite their friends and neighbors to now become readers of this Journal. We shall take good care to make the paper eminently worthy of their perusal.

The Descriptions and Illustrations of a large number of excellent articles, in great variety, on pages 379 to 404 inclusive, of the Supplement, will interest all our readers, even if they care nothing for the Premium Offers.

Carefully Preserve the Supplement to this number. It will be useful for reference on many points all through the year, while its premium offers hold good from now to July 1, 1881.



containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Where to Get Things Wanted.—Many *thousands* of letters come to the Editors every year (some with and some without "return postage"), asking where they can obtain from trustworthy parties, implements, animals, poultry, seeds, plants, fertilizers, and a great variety of other things, all of which questions we try to answer when we can. But nine out of ten of these letters, and much valuable time of both writers and respondents, would be saved, if the inquirers would take the little trouble required to just look through the advertising columns, where usually, in one number or another, several parties announce the very things asked about. We try to keep out all parties not trustworthy. If any mistake occurs, after all possible care, we can only acknowledge to having been deceived, *for we do not admit any advertisers whom we would not ourselves patronize when wanting the things they offer.* (The Editors have the "veto power" over any and every advertisement proposed for these columns.) It will always pay to read through the business columns to see what is offered and by whom, and useful hints are often derived from reading what others say and how they say it. New ideas are thus started up in one's mind.—When corresponding with any of our advertisers, or sending for catalogues, etc., it is well to state that you are a reader of *this* Journal. They will know what *we* expect, and what *you* expect of them as to prompt and fair treatment.

The Fair List.—The attention of our readers is called to the Fair List to be found upon pages 367 and 368. We return our thanks to the Secretaries and others, who have favored us with Premium Lists of their fairs, and wish that every fair, small or large, may be a success.

The most Important public feature of the extraordinary Premium List in the supplement, is the opportunity afforded to individuals, and to communities, societies, etc., to secure **GOOD BOOKS** on various subjects, including Agriculture, Horticulture, and other topics, **WITHOUT COST,** except transportation. By turning to page 380, it will be seen that any number of persons, from ten upwards, *now* contributing $1.50 a piece can *each* have the *American Agriculturist* from Oct. until the end of 1881, and at the same time, without further expense, secure for the common use of all, good Books of their own selection to the amount of $10, $20, $50, or even $100 or *more.*—It only needs some energetic public-spirited leader, in every neighborhood to secure this much desirable result. One of the club can be appointed keeper of the books, and they can circulate from house to house until all read them. They will be a library of reference for all, for diseases of animals, and on a thousand other topics.—If this is not done by combined effort, any individual may collect a club of subscribers, and receive the books for his own individual property, to be loaned out or not as he may choose.

Our Associate, Mr. Orange Judd, has been appointed an Indian Commissioner by the President. Though the appointment was a surprise to him, Mr. Judd accepted it, believing that it presented a wide field for philanthropic labor, and he is now on his way to visit the various Indian tribes scattered through the Far West. The universal expression of opinion from the press indicates that the public regard this as an appointment eminently fit to be made. During Mr. Judd's absence we are promised many sketches from him of unusual interest to those engaged in agricultural pursuits. Old readers of the *American Agriculturist* are aware that he is a close observer, and describes what he sees in a graphic and entertaining manner. His letters will constitute a most valuable feature of the paper during the next few months.

"Experiment Stations" not New.—We are apt to look upon the various methods for the improvement of agriculture as modern, and give little credit to the fathers for what they have done. We came across an illustration of this in a brief glance at the excellent agricultural library of Prof. Miles of Houghton Farm. The works issued two and three centuries ago are not so numerous as those of the present day, but they show that farming, gardening, and rural pursuits generally, occupied nearly as large a place, proportionally, as they do in our literature now. In a book of 303 pages now before us, *printed in* 1655, (225 *years ago*) entitled Samuel Hartlib, His Legacy of Husbandry, p. 89 § 20, on Deficiencies in Agriculture, we read: "2. *Deficiency*, is, that Gentlemen try so few experiments, for the advance of this honest and laborious calling; when as many experiments might be made for a small matter; for half a Pole square, will give as certain a demonstration, as an Aere; and a Pottle [2 quarts] as an Hogshead. *I hope in time there will be erected a College of Experiments*, not only for this, but also the Mechanical Arts."...."3. *Deficiency*, is, that Gentlemen and Farmers do not *meet* and communicate secrets of this kind, but keep what they have experimented themselves, or known from others; as Sybils leaves...""5. *Deficiency* is, that men do usually cover great quantities of land, yet cannot manage a little well ...*A little Farm well tilled is to be preferred*...." All sound teaching is not new.

Sign Your Name!—When a letter is full of information, we are pleased to know from whom it came and to acknowledge it, which we cannot do when no name is given. If direct questions are asked, the omission of the name is all the worse for the sender, as he or she must go without an answer. Always sign your full name—not simply the initials—to even a postal card that you take the trouble to address to us.

The Clover Crop.—It is very seldom that one hears of a farmer who says he has grown too much clover, that with him the clover seed he has sown has not been his best manure. A rotation that does not have clover in it shows that either the system of management is at fault, or it is one fitted to some peculiar circumstances. Clover does not have one single good quality in its favor, but a number of them—not the least of which is its production of a large amount of valuable fodder in two or more cuttings, if for hay: and it makes a fine pasture if the crop is used in that way. The good influence of the clover crop is felt for years in the better corn, wheat, etc., that follow, and this comes from the fact that the clover plant is a deep feeder and brings up a large amount of food elements from the subsoil and deposits it in the larger roots near the surface. As these roots decay the succeeding crops take up the nourishment from them. A growing clover field is a food-gathering, and food-producing, soil-improving, and altogether a very valuable crop upon the farm.

"Don't Like the Premiums."—An old subscriber, whose opinion and good will we highly regard, writes: "* * * I don't like your premium business. Why not abolish it and give every subscriber the benefit of the premiums * * *" We would like to exchange places with our friend for a little while, we enjoying his quiet life, and he taking full charge of the publishing business. He would get some new ideas in one year, or at least in twenty-seven years as we have done, provided he did not wear out before the end of the time, as nine-tenths of the papers we have seen started, have done. Elsewhere (page 377) we have explained the theory of giving premiums, and let us just add here, that every subscriber *does* enjoy the benefit of the premiums. The regular single and club prices of the paper as given on the 2nd cover page, are as low as they can be without diminishing the value of the paper, and lower than they could be were it not for the premiums which increase the circulation. The larger the circulation the greater is the number of persons among whom is divided the general expense of preparing matter, engravings, type-setting, office, etc., and so a far better paper can be given to 100,000 or more subscribers than could be given to a smaller number at the same price per year. Remember that the premiums are paid for out of advertising receipts, which the larger circulation brings in. The extra advertisements on the extra premium supplement will largely swell the list of the premiums. Our friend can shut his eyes on the premium sheet, and read only the regular sheet which, as he says, "is worth what it costs him anyway," and still be satisfied.

Oats with Wheat.—The sowing of a bushel of oats per acre, with the winter wheat, has often proved of material benefit to the wheat crop. The oats grow more vigorously than the wheat and aid in catching and holding the snow. The oats act as as protection or mulch to the wheat. The little food the young oat plants draw from the soil is returned during the spring when, being killed by the winter, they rapidly decay.

Plants, Insects, etc., by Mail.—We have on hand, at the present time, half a dozen or more packages by mail, containing specimens of plants, insects, etc., sent for us to name, which give no clue to the sender. We have also a number of letters and postal cards, saying in effect, that "a plant or insect is sent this day by mail—What is it?" We are in some cases able to learn who sends the specimen by the hand writing; sometimes a descriptive hint in the letter helps, but after we have done all, there are several left wanting an owner. In the majority of cases the specimen and note can come together under one letter stamp, and it is always better to send thus than to separate them. Where the size of the specimen makes it desirable to send it at the lower rate of postage, then the letter should so describe the parcel that we can be sure to refer it to the proper owner.

The Farmer's Weather Case.—In answer to a number of letters asking how, when and where the Weather Case, described in the June number, page 231, can be had, we will say that an official letter from Washington on this point states: "Due notice will be given the public through the press at such time as arrangements for the instruments may be completed."

A Dairy House on a Small Scale.—"D. G. C., "Prince George's Co., Maryland, writes: "My wife wants a dairy house, and unfortunately I have neither a spring nor a running stream available, sufficiently near the dwelling house for her purposes; I have, however a very fine well of water, which I have thought could be utilized. My idea is, to dig a pit, say four or five feet deep, wall it up to about four feet above the ground (of course have the pit well drained) cover it with an arched roof, and the whole covered with dirt and sodded. Internally, I would connect the receptacles for the milk and cream, and butter, with the pump in the well, so that whenever the pump is used there would be a flow of water into them. I would be obliged to you for your advice as to the practicability of this plan, and whatever suggestions you may deem advisable to render it successful."—Your plan is a very good one—but you want to have both light and ventilation, by which we mean neither a glare of sunshine nor a breeze, but light enough to see every thing clearly, and a constant change of air. If the water can be held at a temperature at or near 55° you can employ deep setting—otherwise experience teaches some system of shallow setting will be best.

Amount of Seed.—There is no precise amount of wheat to be sown per acre—no rigid, inflexible rule to be followed any more than in the application of manure or an artificial fertilizer. Much depends upon the soil; if it be rich, deep, and clean of weeds, the amount of seed need not be great. Mr. Mechi, of England, advocates thin sowing, hoeing only three pecks per acre; but his land is in high culture, thoroughly drained and clean of all weeds, and every grain strikes its roots deep into the soil, finds an abundance of food, tillers freely, and soon covers the ground with a vigorous growth. There is much difference in the size of the grains of different varieties of wheat, therefore, the smaller the grain the greater the number of plants that may grow from a given amount. The end to be gained is to have the ground well covered with deep rooted, well fed, and therefore, vigorous plants, and any more or less seed than will do this is a poor seeding. It is evident that we can not give any rule for everybody to follow on any kind of soil under any circumstances.

"Clydesdales for America."—The "North British Agriculturist" (Edinburgh), under this head describes three fine Clydesdale stallions recently shipped to the United States. They are of the famed "Prince of Wales" breed, with noted animals as their ancestors. "These horses are only two years old and should prove a real acquisition to the already large number of good Clydesdales in America."

Implements in the Field.—One in riding through the country is surprised at the manner in which farmers leave their valuable farm machinery in the field without any protection from the rain and the sun. A shed of rough boards costs but little, and will pay a large interest on the investment, if used to shelter these machines. Because we do not see the slow decay, we are apt to forget that it is going on, until reminded by some costly machine which goes to pieces just at the moment when most needed. This treatment of machines is excellent for the manufacturers, but it is one of the prominent reasons why "farming don't pay."

Fast Time.—The remarkable trotting speed of a mile in 2.13½, made by Mr. W. H. Vanderbilt's six-year-old mare "Maud S.," at the Chicago Trotting Park, last month, leads one naturally to look into the character of her ancestors, in order to account for her wonderful performance. Her sire was "Harrold" (son of "Rysdyk's Hambletonian" and "Enchantress" by "Old Abdallah." Her dam was "Helen Russell" by "Pilot," son of "Pacing Pilot"; her third dam was "Maria Russell," by Thornton's "Rattler.") It will thus be seen that "Maud S." is from fast stock and a good record might be expected of her. "Her legs and feet are faultless in form, and apparently of a quality that will stand up under any amount of use; and, judging from her actions on the track, she is as faultless in disposition as in conformation." This simply shows that breeding will tell, and that there is a great deal in pedigrees, if made with some definite end in view. "Like produces like."

Old Meadows may be quickly renovated by cutting up what may be left of the old sod, with a disk harrow, then applying a good coat of fine manure and seeding with timothy and clover. The surface may be rolled after the grass seed is sown to make the surface smooth for the mower. A good mixture of seeds for meadow hay is Orchard-grass and Kentucky Blue-grass, one bushel each, and six pounds of Red Clover.

Rain Water from Barns.—With eave-troughs upon the barns and a cistern, a good supply of water might be secured to supply the stock when the barn well fails, as it frequently does in the summer. The annoyance of dripping eaves and a sloppy barn-yard, with its waste of manure from washing would be avoided, which, aside from saving the water, would more than pay for the expense of eave-troughs and the cistern.

Muck.—"R. B. K.," Columbus, Wis. The specimen sent is muck of a very pure quality. It looks as if it might be used as fuel, if taken out in blocks and dried; at any rate, the experiment can be easily made. If dug out at the approach of winter and allowed to freeze, it would be useful as an absorbent in the stables, or it may be added to the manure heap. Having drained it, you can, no doubt, make it raise something better than "wire grass." We should sow Timothy next spring.

The Grain Weevil.—"H. J. R.," New Market, Va. The heating of the wheat has nothing to do with the occurrence of the weevil. Just how the weevil first gets into the granary would be difficult to say. It, no doubt, can fly for considerable distances, and may be brought on to the farm in various ways. It comes from no other insect. The perfect insect, or weevil, deposits her egg either upon or in a minute hole she makes in the grain. The egg soon hatches, and the resulting maggot feeds on the contents of the grain; by the time it has made its growth, it has devoured the flour of the grain; it then enters the pupa or dormant state, and in about six or seven weeks from the time the egg was laid it comes out a perfect weevil, ready to continue its kind. How long the insect lives is not exactly known, but it remains over from one crop of wheat to another, in the beetle state, hidden away in cracks and other places of shelter. The best method of getting rid of the weevil, when it has once established itself, is to store the wheat elsewhere for two years, thus starving it out. To keep the weevils out, the French line their granaries with sheet iron, taking care that the door closes with a tight joint, and covering the ventilating openings with wire gauze.

Kentucky Blue-Grass.—Prof. Asa Gray writes: A correspondent wants to know, and asks us to tell him "botanically," whether "Kentucky Blue-Grass," (*Poa pratensis*) is a native grass in that State and Indiana, or whether it was introduced from the East. That is just what I would like to know myself. I do not know of its being really native anywhere so far south as Kentucky. But where did the name originate? "Blue-Grass" is not the English name of any grass, and I never heard it used in New England or New York. If the name grew up in Kentucky it would more likely be applied to a native grass than to any one introduced, which would come with a name of its own. Then is there any likeness about *Poa pratensis?* The insignificant *Poa compressa*, which may be called *Flat Grass*, is bluish; and was not that what was first called Blue-Grass? Somebody may know. [*Poa compressa* is often called "Wire-Grass." Ed.]

The Cotton Worm Investigation.—Prof. C. V. Riley, Chief of the United States Entomological Commission, has charge of the investigations of the Cotton Worm, so destructive in the South. For this important work a corps of assistants has been employed, and the members are to be distributed as follows: Prof. J. P. Steele, of Mobile, will go to Texas, and make his headquarters somewhere in the Colorado Bottom; Prof. W. S. Barnard, of Cornell University, will be stationed at Vidalia, La., so as to study those portions of Louisiana and Mississippi omitted in 1878 and 1879, on account of yellow fever. Prof. W. R. Jones, of the Mississippi University, will represent the investigating committee among the cotton lands of that State. Judge J. F. Bailey will have charge of Alabama. Prof. W. G. Farlow, of Harvard University, will aid in experiments to test the usefulness of fungus germs in the destruction of the cotton worm. Some time in September Prof. Riley expects to go to California to take steps towards the cultivation of the *Pyrethrum*, a plant which he believes to be the future, dangerless antidote for the cotton worm.

Petroleum to Preserve Wood.—The primary cause of decay in wood is the fermentation and decomposition of the sap that is within the pores. Wood, pure and by itself, is not easily destroyed by the ordinary agencies of nature, namely: wet and dry weather, heat and cold, etc. If the sap within the pores can be either removed or rendered inactive, the wood may be preserved. There are several methods of doing this, such as saturating the wood with mineral salts, creosote, etc. The cheapest, easiest, and therefore the best method, seems to be to charge the wood with crude petroleum. Pine, for example, is made almost water-proof by saturating it with this material, and therefore made much more lasting. Crude petroleum is very cheap, and may be applied with a brush until the wood will take up no more. In the application, care should be taken to avoid accidents from fire, and not approach the work with a flame until it is dry. An application of petroleum is especially valuable to much exposed wood-work, as, for example, the shingles on buildings, which by actual experience are found to be rendered much more durable.

Grapes from Texas.—On July 7th, D. M. Perl sent from his "Hungarian Vineyard," in Harris Co., Texas, specimens of European grapes raised in the open air. These were Black Hamburg and Furmint, a white Hungarian variety. He also sent photographs of other varieties that ripen in June, and stated that his crop began to ripen on the last of May. Texas is indeed a favored climate if European grapes can be grown in the open air. The specimens, especially the Hamburg, were well ripened, and of much better flavor than those raised under glass. The bunches were too compact for the berries to be evenly colored, a difficulty easily remedied by thinning. We shall be glad to hear that the present success is continuous, and that these varieties can be depended upon to produce and ripen in this manner year after year, as it opens up a new supply of grapes.

Norman and Percheron Horses.—Mr. M. W. Dunham, of Illinois, landed 97 French breeding horses from the Steamer "Egypt," which arrived on the 8th, and were shipped West early in the same week. There were some 30 stallions, 30 mares, and 30 weanlings and sucklings, of which a large proportion appeared to be mares. There were comparatively few grays, but nearly all the importation were very dark, many blacks, with a few bays. It is the largest importation of breeding horses that has ever been made to this country. Several of the stallions were of enormous size, and of the Norman type, others possessed characteristics of the Percheron type. The quality on an average very good.

"Subscriber" has a tree which bears an abundance of fruit somewhat like a small red plum. He takes the trouble to get a specimen, put it in a parcel and send it to this office. With the parcel is a note which shows that the writer wishes to know "all the particulars" concerning the fruit, and whether there is "anything injurious" about it. But the note comes with nothing to indicate where the writer lives, or who he is—he is merely "Subscriber." Such things are very trying to the patience. Any information we may have is always at the service of our friends. As it is of no interest to any one but "Subscriber" to know what his tree is, we can not take up space in the paper to give it. All we can do is to wait until we learn how to communicate with "Subscriber."

Our Meat Supply.—Mr. J. Howard, M. P., made the following statement before a select committee of the House of Commons upon the meat supply for the English market: "The live stock of a country can not be increased at pleasure as some previous witnesses seem to imagine....The agency of mothers is indispensable in bringing animals into the world, and these cannot be increased at will. I can build a fresh wing to my factory, but if I wish to increase the number of my animals upon my farm, independently of the question of capital, it is a slow process....Although there can be no question that the vast fields of America are capable of sustaining, perhaps tenfold more cattle than are at present possessed, it is obvious that considerable time must elapse before the breeding facilities of the country can be materially increased." In view of such a statement made by an Englishman, and the fact that London is our great foreign meat market, it is to our interest to increase the number of our breeding animals, in the great West, as rapidly as possible. To send heifers and young cows to market, is not to be commended under existing circumstances.

The Wheat Crop of 1880 will not be far from 480,000,000 bushels, an increase of 30,000,000 bushels over the unprecedented crop of 1879. If 20,000,000 bushels are allowed for increased demand for food and seeding, there will remain for export at least 190,000,000 bushels. The foreign wheat crop is also generally good, though Russia will probably not market as much as last year. A low price for our wheat is inevitable; but this does not mean to us what it does to the English farmer. The London "Telegraph" on this point says: "The low price of wheat in this country while it leaves a good profit to American growers, enables them to deliver grain at Liverpool, at a price lower than the minimum cost of producing wheat in England, and hence it is to be feared that, in spite of the fine prospects, the British farmer has a cruelly hard time in store for him, even if prices fall no lower. That they are likely to fall so low at least, that an American surplus of about 200,000,000 bushels can be marketed abroad, seems plain. The natural result will be a further abandonment of wheat-growing by British farmers, and a greater dependence hereafter upon American supplies." The good wheat crop everywhere is, it seems, working to the advantage of the American grower.

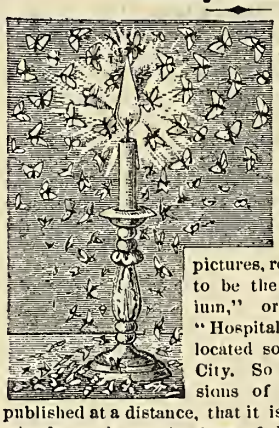
Spreading Manure.—From the time the manure is dropped until it is spread upon the land there is a continual loss, by gradual decomposition and washing by rains. When upon the soil this loss is not sustained, as the rains carry the valuable solutions down into the soil, where they are absorbed and retained. It is, therefore, the best practice to spread the manure upon the meadows and plowed land, in fact anywhere that plant food is required, both now and through the winter. There is a saving in labor to draw the manure in winter, when the snow is on, as it is easier to load it upon a sled than a wagon, and the load can be drawn with greater ease.

A Leading Crop.—In view of the diversified character of farming and the many kinds of animals, grains, fruits etc., that can be grown, the question naturally presents itself to the farmer: How many kinds of produce can I grow, and with the greatest profit? There are so many things to be taken into consideration, as the kind of soil, distance from market, climate, and not the least, the individual taste of the farmer, that it is often a hard matter to decide upon the crops to be grown. As a general rule, however, it is best to make some one thing a specialty—the one best adapted to the taste of the man and the circumstances with which he is surrounded, and let the other products of the farm cluster around it and play a secondary part. All cannot grow grain, neither can all be sheep raisers, or breeders of swine or cattle. We are not speaking against a mixed husbandry, but against a loose farming without system.

The Death of M. B. Bateham, occurred at his residence, at Painesville, O., on the 5th of August last. Mr. B. was at the time of his death, as he had been for many years, Secretary of the Ohio State Horticultural Society, and was one of the most widely known horticulturists of the country. He wrote frequently for the press, and if we mistake not at one time occupied an editorial position. We have no particulars of his death, the mere announcement of its occurrence having been sent by a member of the family. Mr. B. was an active member of the American Pomological Society, and the members of that body, as well as a large circle of other friends, will kindly remember him as a genial gentleman and an accomplished horticulturist of wide experience.

Horses' Feet.—Long exposure to wet and mud at this time of year frequently produces cracks and other troubles in horses' feet. The prevention is in keeping the feet clean by frequent washing and wiping dry with a coarse cloth. A little crude petroleum applied to the feet before the horses are taken from the stable will help greatly in preventing them from becoming cracked. If the feet are already in bad shape they should be bandaged and the horse kept where it is dry. Cleanliness is the most effective prevention of troubles with the horses' feet.

Sundry Humbugs.



Correspondents are often surprised when we tell them that we know nothing of, or never before heard of, some party about whom they have inquired. Our friends have seen in far-off country papers, flourishing advertisements, accompanied by pictures, representing what claims to be the advertisers' "Emporium," or "Manufactory," or "Hospital," as the case may be, located somewhere in New York City. So great are the pretensions of these advertisements, published at a distance, that it is not strange that those who do not know the facts of the case, think that the party must be, with such an immense establishment, a well-known and distinguished man. The "doctor" who goes about the country as "Doctor A.," from the "Dispensary" or "Hospital of Doctors A. & B.," or from some kind of a "University," will give a picture of the building, and sometimes locate it by street and number. Other chaps, who advertise remarkable jewelry, sometimes picture their store as an immense affair, and usually on a corner. If those who are attracted by these advertisements could accompany us on a search for the place itself, they would be astonished to find the "Silverware Emporium," or "Jewelry Bazar," in a back room up several flights of stairs, in a dingy and obscure building, while a search for a "Hospital" or "University" is quite likely to terminate in a fifth-rate hotel or cheap boarding-house, or wherever the advertiser can receive his letters. A large share of those who advertise so extensively at a distance from the city are unknown in it.

AN ILLUSTRATED PAPER

claiming to be published in New York has been advertised, especially in the Southern States, by means of show bills. Large posters 3x5 feet, filled with engravings claiming to have appeared in the paper, have been put up in the country post-offices. The price of the paper was $1 a year, but the first ten subscribers from any post-office would be supplied for 40 cents each. One would suppose that such a discount would of itself excite suspicion, but it appears that a number of Post-masters sent their $4, but get no papers. As a consequence, letters of inquiry have begun to come to us. The cuts on the poster claimed to have been from last year's issues, and it seemed strange that such a paper could have been issued for a whole year and we had seen or heard nothing about it. As its office was said to be 206 Broadway, we started out to make a neighborly call on such a flourishing contemporary. No. 206 Broadway turned out to be the large and elegant building of the venerable "Evening Post"; inquiry of the janitor and the elevator man failing to give the whereabouts of the "Illustrated News," we went to one of the proprietors, but with a like negative result. Many inquiries for the paper had been made, but no such journal was located there—and probably not anywhere else....Now that the bogus stock brokerage, the "put and call" business has been so thoroughly broken up, the energies of the speculators must find other channels. Some parties have taken up

GAMBLING ON THE PRICE OF COTTON,

and have sent out their circulars, especially to residents of the Southern States. The story is too long and too complicated to give here, but one by paying the chap at headquarters (he has no office, only a post-office number), the sum of $2, one can fill out a blank directing the purchase of "a fractional part of one hundred bales of cotton, to be settled for according to the average price for September." The account is very wordy, but it all means betting upon the price of cotton, and all prudent persons will save their $2 and let the scheme alone.... A young man who thinks he has been defranded by a

"BOOK AND BIBLE COMPANY"

wishes us, if we think the company is a swindling one, to publish his statement. His story is not sufficiently clear, but we can make out from it that he ordered books, not because he wanted them, but because they were apparently cheap, and when they came they had the name of the "Company" pasted over that of the real publisher. If his experience teaches our correspondent and his friends to only buy such books as they need, and to get good, substantial editions, the lesson may not be a dear one....A number of inquiries have been made as to

A ONE DOLLAR COOKING STOVE,

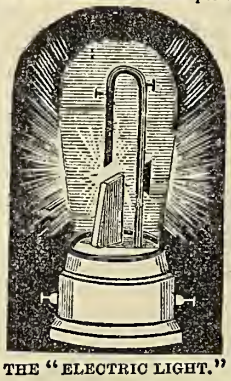
for which the descriptive circulars make great claims, while they do not show at all clearly where the heat is to come from. One of our associates called to look at the stove, and rendered a written report of his investigations thus: "A cheap frame of tin to set over any lamp. In fact, 'cheap and nasty.'" ...There are few subjects about which people in general have less knowledge than they have of electricity, and it has consequently been easy for pretenders to turn it to account in various forms of swindling. In view of the new interest in the subject caused by the more or less successful attempts at lighting by electricity, it is not at all surprising that we should have

A HUMBUG ELECTRIC LIGHT.

Our attention was called to an advertisement of a Chicago dealer, which was made conspicuous by the engraving here reproduced. The advertisement, after some remarks upon the electric light and its inventors, says: "But it remained for Mr. Krauss, of London, England, to accomplish the desired result. This cut accurately represents his wonderful lamp. *It will produce instantaneously* an Electric Light of *great steadiness* and *intense brilliancy!* Its action being automatic, it requires no attention, and will burn for hours, costing a trifle only. It is adjusted ready for *immediate use*, and is so simple a child can work it. Price, complete, only $1. Every lamp is warranted, and is imported." The italics are the same as in the advertisement. Of course we knew that no lamp like that in the engraving could possibly be made that would of itself produce a brilliant light, and wishing to see "the point" of the swindle, we requested a friend in Chicago to invest $1 for us in what the advertisement properly calls

A "WONDERFUL LAMP."

The lamp came in due time, and consists of a glass shade upon a base, as shown in the engraving, with wires and carbon points within. The glass is 6 inches high, 2 inches in diameter, and the parts are put together in the most rude and bungling manner. The fraud in this case consists in not telling the whole story. One unfamiliar with electrical matters would suppose from the advertisement, and its wording would warrant him in doing so, that the lamp was complete in itself. But after purchasing the lamp, he would learn from the circulars accompanying it that he would be obliged to either purchase or make a battery in order to work it. The English maker offers batteries ready made, and he kindly shows how to make one from materials he has for sale. One of the circulars says: "Should it happen that any foolish individual has purchased the lamp with the idea that immediately he takes it from the box it will commence throwing out a bright light forever more, he will even now be enabled to correct his mistake, and construct a battery, etc." That is cool, indeed! The whole object of the advertisement is to convey the idea that the lamp is complete in itself, and then to call the person who gets deceived by it "foolish," adds impudence to rascality. The thing claims to be made by a "Scientific Toy and General Novelty Co.," of London, and in enumerating the various articles it deals in, among "Mechanical Models," "Parlor Fireworks," etc., it offers "Sundry Practical Jokes," we judge that the electrical lamp comes under the head of "Practical Jokes."....There seems to be a strange lack of knowledge in regard to



THE "ELECTRIC LIGHT."

MEDICAL MATTERS.

For example, a correspondent in Nebraska inquires about a "Doctor" who "guarantees to cure epilepsy," asking if he is "reliable," etc. If our friend, evidently a man of intelligence, would think of the matter a minute he could answer the question himself. The very fact that the chap "guarantees to cure" anything, shows him to be a quack to be avoided. A regularly educated and conscientious physician has no such assurance—he knows that he can not "warrant" a cure in any case; at

most he will give his opinion of the probabilities; he is too honest to "guarantee" to do what he knows to be beyond his powers ...We sometimes wonder if people remember what they read. Here is a letter from Toronto, Canada, inclosing a circular about which the writer is very indignant, as he says it was sent him "by some scoundrel in New York,"—and closes his letter with: "Cannot you ventilate this villain who claims to be both parson and doctor?" Who does the reader suppose we are thus asked to "ventilate"?—None other than our particular pet, Rev. Joseph T. Inman, with his

CORASSA COMPOUND RECIPE!

One of our "stand bys" for these fifteen years. Other quacks have come and gone, but Joseph is perennial. We have shown the nonsense of his "Corassa" stuff over and over again, so frequently have we been asked about it. It was only in May last that we were driven to showing up the trick again—and now comes our Toronto friend asking if we cannot "ventilate"!!

Wheat Culture—A New Work.—In view of the increasing interest in the cultivation of the staple crop—Wheat,—we are glad to announce that the Orange Judd Company have in press, an entirely new work entitled: "Wheat Culture; How to Double the Yield and Increase the Profits. By D. S. Curtiss, Washington, D. C. For many years a Farmer in Michigan, Illinois and Wisconsin." The few existing works on wheat culture, besides being somewhat antiquated, try to tell too much, and while they are useful for reference are quite too bulky for hand-books. The author of the present work, we are informed, has had wide experience in wheat culture, and has put what he has to say in a compact, clear, and practical form, and it cannot fail to meet the wants of a large number of farmers. The work will probably be ready soon after this paper reaches its readers.

(*Basket Items continued on page* 365.)

A Farm Gate.

Mr. "M. H. H.," Luzerne Co., Pa., sends a sketch and description of a gate he has in use, and is so

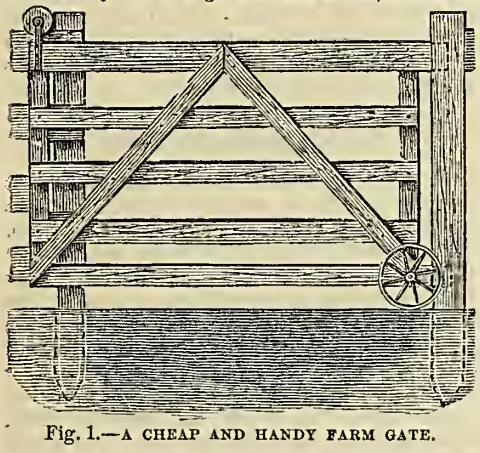


Fig. 1.—A CHEAP AND HANDY FARM GATE.

cheap and satisfactory that he desires that others may make and use it. The posts are set at the desired distance apart, and a heavy plank, or better, a timber with a smooth upper side, is laid level with the ground between the posts. This makes a track for the wheel, fastened at the lower corner of the gate, figure 1. The gate is made of the same form and of the same material as an ordinary swinging gate, care being taken to fasten the bottom wheel securely to the frame. A strip of board should come down on the outside of the wheel and hold the bolt which passes through it, the wheel, and the gate. A pulley is placed upon the opposite and upper corner, which should be six inches in diameter, and with a deep groove, which prevents the pulley from getting off the upper board of the fence along which it rolls. The axle, figure 2, of the pulley is an iron rod which bends at right angles and passes down the side of the end piece of the gate, to which it is firmly secured by stout nails or screws. Old iron wheels may be often found around the shop to answer the purpose.

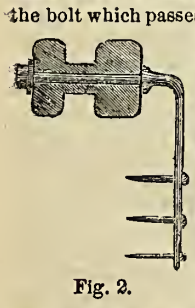


Fig. 2.

Mixed Husbandry consists in the cultivation of various crops, and keeping of most kinds of domesticated animals,—in short it embraces all of the other systems, but on a smaller scale. It implies a thorough knowledge of animal and vegetable life in all conditions of soil and climate, every aspect of rural economy at home and abroad, and also an acquaintance with the allied arts and sciences. It possesses one prominent advantage over the other systems, and that is its freedom from risk, and sure returns for money invested. If one crop is a failure, another may be unexceptionally good; if pork is low, beef and wool may be high; if fruit is abundant and cheap, vegetables may be scarce and dear. Though mixed husbandry is seldom characterized by as large profits as in grain or pastoral farming, it is not subject to such severe losses by storms and bad weather. If the farm is well stocked and cultivated, it will be continually undergoing improvement, and instead of becoming exhausted, will get more and more productive. ONTARIO.

Preventing Collar-Galls.

Having been considerably annoyed by the continued galling of horses' shoulders by the collar, the writer took time to investigate the subject. It was found that the whole trouble arose from the direction of the draft causing unequal pressure on the shoulder, which operated differently upon differently formed horses. The collars being similar in form and size, and the line of draft of the harness being the same, the shape and inclination of the shoulder, the hight of the horse, the width of the chest, and other variations, caused an inequality in the pressure, which acted so as to gall the shoulder. Pads upon the collar were unsatisfactory and only temporary expedients, but nevertheless they were very useful when properly made and fitted. The best results were reached by using adjustable attachments to the hames for hooking the traces, so as to change the line of draft, to suit the angle of the shoulder, by raising or lowering the position of the trace hook on the hame. The arrangement is shown at figure 1. It is made of an iron plate, with a number of holes in which a hook or link can be fitted, so as to raise or lower the draft, and change the line of pressure of the collar on the shoulder proportionately. The action of the arrangement can be seen as soon as the horse pulls on the trace, and if it is not precisely correct, should be changed until it is, and the line of pressure brought parallel with the line of the shoulder. To protect a galled shoulder while it is healing, pads of the form shown at figures 2 and 3 may be used. These are made of stout canvas and filled solidly with tow or hemp; a covering of smooth, hard leather may be added. Straps and buckles are used to fasten them to the collar. The pad is fitted to the collar in such a manner as to relieve the galled part from pressure; and either kind of pad will be found useful for different kinds of galls.

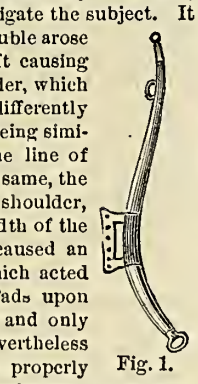


Fig. 1.

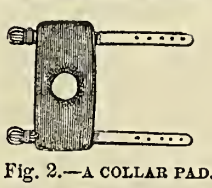


Fig. 2.—A COLLAR PAD.

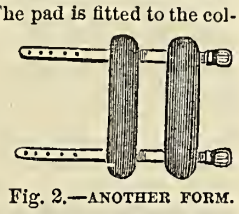


Fig. 2.—ANOTHER FORM.

Cement: How to Mix.

Inquiries by letter in regard to the various details of cement, its composition, methods of mixing it, etc., are quite frequent and we make a general reply. Cement is made from what is known as Hydraulic Limestone, that is, a rock which, besides Carbonate of Lime, contains a considerable portion of Magnesia, Silica, and Alumina or Clay. The Rosendale cement, the leading kind in this country, and nearly as good as the imported Portland cement, is manufactured at Kingston on the Hudson, N. Y. The composition of this Kingston rock is as follows: Carbonic Acid 34.20; Lime 25.50; Magnesia 12.35; Silica 15.37; Clay 9.13, and Peroxide of Iron 2.25—the latter being of no value. Pure lime-stone is made up entirely of the first two substances in the proportion of, Carbonic Acid 56 parts, and Lime 44. Such a stone, when burned, loses the carbonic acid which passes off as a gas and pure quick lime is left behind. When this quick lime is brought in contact with water, a combination takes place, heat is evolved, and hydrate of lime is formed—this process is called slaking. When the water is in just the right proportion to slake the lime, a dry white powder results; if the water is in excess a paste of lime is formed, and is the substance which builders mix with sand to make mortar. When clay is present, as in the case of the Kingston stone, the burning gives, instead of quicklime, a hydraulic lime, which combines with a much larger per cent of water, and instead of falling to a fine powder sets into a stone again. This setting into a stone takes place even in excess of water, because only a definite amount enters into the combination and the remainder is excluded. The hardening will therefore take place under water, and this is the most valuable property of the cement. When this cement is made into a thin paste and mixed with gravel or poured over broken stone, a concrete is formed which soon hardens into a mass with the firmness and durability of stone. The setting takes place quite rapidly, which makes it necessary that the cement be used, that is, put where it is to remain, very soon after it has been mixed with the water. The method of using cement is therefore quite different from that of mortar. The cement and sand—if sand is used—should be thoroughly mixed together while dry, and in the proportion of four parts of sand to one of cement, after which the water is added, and when a uniform paste is obtained, it should go at once to its place of hardening in the wall, etc.

Editorial Correspondence. — Items from "Notes by the Way."

[Owing to the extra printing required by the Supplement, this number goes to press early, and Mr. Judd's "Notes and Observations at the West" have not come to hand as we close these pages, except the few items which we give below.—EDS.]

Quick Crops from Prairie Soil.

We are now passing over broad prairies, still unbroken by the plow, except here and there where the new comers have built "sod cottages," and turned over a few acres on which are cornstalks struggling for existence. As a rule with those who settle on prairie lands—as hundreds of thousands have done, during a year past, and as multitudes are now doing every month—the sod is broken the first year, allowed to decay until the following spring, before a crop of corn or spring wheat is put in. It is an immense gain, for emigrants from the Eastern States and from Europe who come hither early in spring, to put in a crop at once that will furnish food for the following winter. There is no doubt that this can be done much more largely than has been generally supposed. We have seen to-day and yesterday, fair corn, pretty good oats, promising potatoes and beans, all on ground that in April last, was in its wild state. The corn and oats are on sod treated thus: First a team with the usual breaking plow goes ahead, and a thin sod two to three inches deep is turned over flat. Following immediately after is another common plow, set to cut one to one and a half inch deep, which takes up a second layer of the under soil and throws it upon the turned sod. A light harrow, with the teeth inclined backward is then put on which finely pulverizes the top layer and a little of the soil on the sod, but without tearing up or disturbing the sod itself. This furnishes a good seed bed in which the corn is planted, and the oats sown. They keep ahead of the weeds, and show well at this date.

Potatoes in Fresh Prairie Sod.

We saw in one place about half a dozen acres in potatoes planted thus: The plow turned the sod over about three inches deep. A boy followed the plow and against the edge of the turned fur-

row placed a cut piece of potato, or a small one whole, once in every three feet or so. The next furrow covered them, and in due time they sent up a good growth of vines between the sods. The vines look very thrifty, and on opening a few places we found a plenty of growing potatoes, some of them large enough to cook to-day (Aug. 9), and all promising a good crop. In another place the plowing was first done, the sod opened with a sort of wooden spud, the potatoes dropped in, and the opening closed by drawing in a little soil with a hoe. For some reason this plot did not look so well as the other, but it may have been due to other causes than the mode of planting. The first method required the least work. The latter may be preferable when not ready to plant at the time of breaking up of the prairie sod.

Field Beans on Fresh Prairie.

We have also seen very good crops of field beans growing on land broken the present year. These were planted in the cracks between the turned sods, in some cases by sticking them in by hand, and in others by forming a receptacle 1½ to 2 inches deep with a wooden implement like a crow-bar, with the end flattened out to an inch in thickness, and three or four inches wide, and blunt at the bottom end. A cross pin through it regulated the depth. The holes were made with a single thrust, the seed dropped, a little dirt thrown in, and the work was done. Another plan is to use an old axe, which is struck down between sods, or into them, the seed, corn or beans, dropped in, two blows struck on each side to loosen a bit of the soil, which is pressed down with the foot to cover the seed. These beans, as well as the potatoes and corn above described, will supply excellent nourishing food for man or beast during the coming winter.

White turnips on prairie sod can be grown with fair success, not always with certainty, as in a dry season they may not take, or may dry out after they have made a good start. They can be put on any broken sod, harrowed, and sown during July.

A Yorkshire Man on a Prairie Farm.

By an incident of travel, we chanced upon a large prairie farm in Leyden Township, Illinois, and had a familiar chat with the owner, Freyer Marwood. He came from Yorkshire, England, direct to the West, and had but a single dollar left in his pocket on arriving upon the western shore of Lake Michigan. To-day (Aug. 9) we found him with his three sons on a farm of about 600 acres, all purchased at from $50 to $100 per acre, and paid for out of the products of the farm itself, and he now lives in a fine residence recently erected. Some items from his experience will be interesting to many young men in the Eastern States, as well as to multitudes in his native country. They may also well be studied and *thought about* by not a few of the older and more recent settlers upon prairie farms over much of the West. By the way, Mr. Marwood says that while young men from crowded old England may generally improve their own condition by emigrating hither, and leave more room and scope for those remaining behind, he strongly advises the older people not to come. Those having their modes of thought and work fixed by years can not easily adapt themselves to the habits of this new country. They will always be longing for the fatherland, be uneasy, and have no certainty of success. When he came he resolved to at once

Become an American Citizen,

and adapt himself to the country he had chosen for his future home. He registered immediately, and felt himself to be henceforth a full-blooded American, and determined to make the best of it. Having learned the blacksmith's trade in youth, he worked at this until he acquired a few dollars capital. In 1857 he rented 40 acres, with a small house on it, at $70 a year; raised what corn, potatoes and oats he could, and after nearly five years had only a small stock of cows left. In 1861, having learned the way to work, he rented another farm of 160 acres at $300 a year, and went to raising corn, oats, grass, and some wheat. At the end of four years he had by strict economy and hard work paid the rent and saved $2,000, with some stock and implements. In the year 1865 he made

His First Purchase of Land,

a farm of 120 acres, at $50 per acre ($6,000), paying down his $2,000, and having six years to pay the balance of $4,000. This mortgage he paid off in less than four years out of the products of the farm. It should be stated that in all these years he cut more or less grass from the unoccupied prairies around him—an opportunity not now open anywhere near any city or village. During the past 11 years he has invested the profits of the farm, not in bonds and mortgages, but in improving the farm itself, and then in buying adjoining land of less practical neighbors, and putting that into a condition for profitable culture. He regards the land as a *machine* for producing crops, and for it to do its work profitably it must be kept in the best condition, and he furnished with the necessary materials out of which to make crops.

Using Much Manure on Prairie Soils.

He ridicules the common practice of burning straw from new prairie land "to get rid of it." On the contrary, he has from the first saved and worked into manure every forkful of straw not eaten by the stock, when he could not sell it at good prices to villagers or city dealers who keep horses. The teams carrying the straw to market always bring back a load of manure. Though his land is as fertile as the average of new prairie, he finds it pays to put on all the manure he can make and get. His large crops of corn, oats, and grass, prove he is correct, as does the constant improvement in yield, instead of the usual depreciation after a few years of culture. Two tons per acre of good Timothy, 70 bushels of oats, 60 to 70 bushels of sound corn are other evidences. But this is not all.

Another Secret of Success

is his belief that he *owns all the soil under him*, and that some of it can be turned to account. After the first thin breaking and rotting of the tough sod, he puts the plow right down from 12 to 18 inches deep, and brings up the buried stores of fertility. He plows the manure down to the bottom, thus tempting the roots of plants to go down there, where they find not only food, but moisture and coolness even in the dryest hot season. The great multitude of prairie farmers who burn their straw, and claim that three or four-inch deep culture is ample, may well take a hint from Mr. Marwood's successful experience. Facts tell stronger than theories or whims. The leaven of English ideas about deep plowing and heavy manuring is not bad, even for slipshod prairie farming.

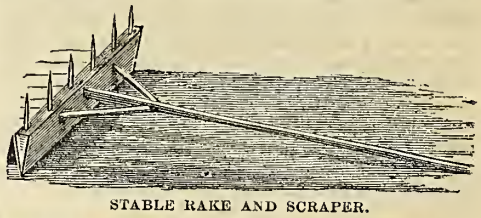
Other Items.

After breaking the sod one season, and allowing it to rot until spring, Mr. M usually sows flax as a first crop, especially as it is one that requires little labor. This is cut with the mowing machine, and run through the thresher, and yields 12 to 14 bushels of seed per acre, which seldom sells below $1.30 per bushel, and often higher. Some of the straw is frequently sold at $3 to $4 per ton, only about paying for hauling it to the mill. As it is of little value in itself for manure, it is usually put at the bottom of the yard as an absorbent of the liquid, and ultimately mixed with the whole of the manure. Flax after flax does not do well. Oats or corn generally follow the first flax crop. Oats do not follow oats well. Corn may follow corn year after year, on good prairie soil, and for an almost unlimited period if the manure is saved and applied on such soils. Poor to medium or fair crops of corn may be grown for several years on ordinary prairie land, but large, paying crops are the rule on land frequently manured. The plowing, the culture, the seed, etc., are the same for a poor as for a good crop; the actual cost of applying the manure is repaid several fold.

[The latest from Mr. Judd is a dispatch stating that he was (Aug. 12th) on his way to Bismarck. He says:] I met with many intelligent farmers in Wisconsin and Minnesota, and examined crops in both those States. Farmers are in excellent spirits, as they well may be, with dairying generally good, and crops of corn everywhere superb. In Wisconsin, wheat is somewhat below the average, while in Minnesota it is above. In the southeast, some damage from the chinch-bug is reported, but in the northeast, the crop is unusually fine, and the harvest weather is all that could be desired. After studying the most recent official county reports, we estimate the crop at forty-eight millions of bushels, which is an increase over former crops of nearly one-half. We find both Americans and foreigners are settling upon the Northern Pacific R. R. lands, the foreigners probably predominating. I met with an intelligent Englishman who had just come over with twelve children. At home he had been a large tenant farmer of the better class, having paid $4,000 rental annually. Here this sum will purchase outright more land than he hired at home. We do not wonder that he reports that many of his neighbors similarly situated are coming.

Stable Rake and Scraper.

A handy combination rake and scraper for the stable can be made as follows: Select a hard-wood stick, fifteen inches in length, four inches wide, and an inch and a half thick; bring it to a triangular shape in cross-section by shaving down one



STABLE RAKE AND SCRAPER.

side to a thin edge. Bore six or eight ½-inch holes into the unshaved side, to the depth of two inches, and insert in them sharpened hard-wood pins, that will project three or four inches. A handle, of the desired length, is then made and inserted, and braced, as shown in the accompanying engraving. Such a tool may be used to either push or pull the litter and manure, the toothed side being especially adapted to loosening and moving those portions that the smooth side will not catch.

Swamp Muck—Its Value.

An item some months ago to the effect that it had been shown that an acre of swamp muck was worth $25,000, has called out several inquiries. This item referred to a former article, and it should have explained that analysis shows that some muck is rich in fertilizing constituents, so much so that at the usual prices of nitrogen, etc., an acre of the muck *three feet deep* had been estimated to be worth the sum named. Very few have an idea of how much of a pile an acre to the depth of three feet would make. The chemist may show that muck contains certain fertilizing materials, yet that may be in an unavailable form, for the plant does not always find and take out what analysis shows a soil to contain, just as the working of a gold or a silver mine never turns out anything like the amount of metal that an assay shows to be in the ore. Muck, as to its agricultural value, has been both much underrated and greatly overestimated. There is muck and muck, and it varies so greatly in different localities that to speak of it as something of uniform composition, like plaster, for example, is liable to mislead. While a given deposit of muck may contain all the elements of fertility, these may not be in a condition to be available as plant food, and may even be the case that they are in a form that would be injurious to vegetation were fresh muck to be applied as a fertilizer. Fresh muck applied to land is of little or no use. If dug in the spring and spread, it dries into hard lumps, and we have known them to retain their form the whole season. For muck to be useful at all, it must first be brought into proper mechanical conditions. It should be dug in fall or early winter, so that the frosts may break it up and thoroughly pulverize it. When in the proper condition, and both fine and dry, it may often be used to advantage in stables as an absorbent of liquid manure. We say "often," as it may happen that leaves or sawdust may be had for bedding at much less than it would cost to get out and prepare the muck for the purpose. Each case must be con-

sidered by itself, as what would be a profitable course for one might be the reverse for another. One may have a deposit of muck under conditions which would make it improper to dig and remove it, and the best economy would be to leave it where it is. If, for example, there is a deposit of muck in a low place, which can not be drained for want of sufficient out-fall. If the muck is removed from this there will be large open pits or ditches; these, if left, will become pools of stagnant water, sure to be unsightly, and often unhealthy. It is true, these may be filled up, but the labor required would probably more than counterbalance any benefits that might come from the use of the muck as an absorbent or a fertilizer. It often occurs that the best use of a deposit of muck is not to remove it, but to cultivate and improve it; if it can be done, drain it thoroughly, and it may often be made the most valuable meadow upon the farm. In the opinion of those who have had the widest experience in the use of muck, this is in many cases the best use to make of a deposit. Our point is, that with muck deposits, as with many other things in agriculture, there is no one rule to meet all cases. While it may be best for A. to dig his muck and let it find its way to the manure heap, such a course, if followed by his neighbor B., would, to use an old expression, "cost more than it came to."

The Preservation of Corn Fodder in Silos.

In an article with this heading last month, the principle upon which corn fodder and other green fodder is preserved by *ensilage* was described. It is, in brief, to cut the fodder as fine as may be, to store it in air-tight tanks or *silos* as compactly as possible, and to cover it as closely as practicable; all the preparation in the way of structures and every operation in filling them having for its object the most thorough exclusion of the air. To those who would investigate the matter in full, we give the following references to the literature of the subject, from which it will be seen that it should be no novelty to the readers of the *American Agriculturist*. Though there had been previous references to what is known in Germany as "sour keep," in which clover, beet leaves, etc., were preserved, the first important article we now remember was on "Sour Fodder Making," by a Hungarian correspondent, published in October, 1873, p. 370. This described, with an illustration, the method of cultivating fodder corn and storing it in pits or ditches, as practised in Hungary, and does not require a building expressly for the purpose. In August, 1874, p. 297, we gave, from the same correspondent, "Sour Fodder Making in Hungary." This described the Hungarian method of storing beets and other roots, previously cut, with chaff in pits or stacks partly below ground and covered with straw and earth, with an engraving showing a pit.

In April, 1875, pages 139-40, we gave an illustrated description of "A Dairy Barn" in Westchester County, N. Y., in which an account was given of a pit for the storage of brewers'-grains. Several thousand bushels of grains were kept in good condition for months, simply by excluding the air.

About this time the preservation of green fodder attracted much attention in Belgium and France, and several articles by farmers and professors in agricultural schools appeared in the *Journal d' Agriculture Pratique* (Paris, the leading agricultural journal of France), giving methods and reporting general success. The important portions of these articles were presented in a condensed form in the *American Agriculturist* for June, 1875, pages 222-223, with six illustrations showing simple pits and extensive receptacles for the fodder built entirely above ground, with the method of filling, etc.

In September, 1877, pages 335-336, we described "An American Silo." This gave two illustrations of the pit attached to the Westchester Co., N. Y., barn (described in April, '75), with hints as to the utilization of such pits for the storing of corn fodder.

In 1877 Mr. Auguste Goffart, an eminent French agriculturist, published at Paris a work on "Ensilage." This was translated by J. B. Brown, of New York, and published in 1879. Besides Goffart's original work, this had an appendix giving several other articles and notes by that author and several of his countrymen, the experience of Francis Morris of Maryland, extracts from the *American Agriculturist*, besides a note giving "Conclusions of the Translator," in which he says: "The first notice of this matter in this country seems to have been made in the *American Agriculturist* of June, 1875." As shown above, Mr. B. was not exactly right as to the date, though quite correct as to the fact. This work was, we believe, published by the "N. Y. Plow Company," in part at least to aid in the sale of the implements made by them for the cultivation and cutting of fodder corn. In April, 1879, we gave an engraving and description of the "Ensilage Cutter," and in July of the same year noted that a supplement to Mr. Brown's translation had been published in a pamphlet form.

On July 6th last, Mr. O. B. Potter read before the "Farmers' Club of the American Institute" a paper giving his experience in preserving fodder by ensilage. This appeared in the "N. Y. World" of July 9th. Mr. Potter's address is not given, but we infer that he lives in Westchester, N. Y. Had there been some one present to question the writer upon a few points which need explanation, this would be the most direct, practical, and compact presentation of the subject of ensilage that we have yet seen.

The latest contribution to the literature of the subject has this title: "The Book of Ensilage; or the New Dispensation for Farmers. Experience with Ensilage at 'Winning Farm.' How to produce Milk for one cent per quart; Butter for ten cents per pound; Beef for four cents per pound; Mutton for nothing, if wool is thirty cents per pound. By John M. Bailey, Proprietor of 'Winning Farm,' Billerica, Mass., and 'Virginia Stock Farm,' Sussex Co., Va. Billerica, Mass. Published by the Author. 1880." There are also some quotations on the title page which we omit. Preceding this title page is an advertisement of "Bailey's Practical Tree Trimmer," one of "Mammoth Ensilage Seed Corn," and a portrait of "Yours Respectfully John M. Bailey," and also Mr. Bailey's hat. Of introduction and contents there are 10 pages; to the subject of Ensilage 111 pages are devoted. The Horses, Sheep, Shorthorns, and Swine, for sale by the author are described in 81 pages and 28 pages of "The Book of Ensilage" are occupied by advertisements of animals, fertilizers, implements, etc., offered by other parties. As mutton can be, according to the title page, raised "for nothing" if one gets enough for his wool, so we suppose a book can be published "for nothing," if one can get enough advertisements, at good prices. Less than half of "The Book of Ensilage" is occupied by ensilage, the larger half being an advertising medium.

Having referred the reader to the sources of information, we recapitulate the important points. Our Hungarian friend described a pit dug in dry soil, 12 feet deep, 12 feet wide at top, 6 feet at bottom, and as long as need be (10 to 20 rods); he stated that this might be walled if stone or brick could be obtained cheaply, but that this was not necessary. Later writers prefer to make the pits wholly, or in part, above ground, and advise them to be carefully walled with brick, stones, or concrete. Some French pits built quite underground, and lined with masonry, are 9 feet wide above, 6 feet below, 6 feet deep, and 75 feet long. Goffart built some of his silos entirely above ground, but, on the whole, prefers to have them one-half their higbt below ground, and this is the plan generally preferred. According to Bailey, a silo 12 feet high and wide, and 30 feet long, will hold 80 to 100 tons of fodder, or enough to winter 12 to 15 cows. The walls should be thick enough to resist the pressure of the earth without, and those above ground, the pressure from within; where concrete is used, they should be 15 inches thick. As the fodder soon wilts and occupies less space than before the mass settles, it is desirable that there should be nothing in the shape of the pit, or the character of the interior surface of the walls, to prevent the mass from settling evenly and becoming compact and solid throughout. A suitable roof is needed to shed rain. The cutter should cut the corn into half-inch lengths or smaller, and be run by steam or horse power. The fodder corn should be cut at the time it is in its best condition for feeding, *i. e.*, when the "silk" first appears. The cut fodder is trampled down as close as possible, and during the intervals of the work of filling, planks should be put on the top upon which weights are placed.

Formerly a portion of straw was put with the corn fodder, but this is not now regarded as necessary or even desirable; neither is salt needed to preserve the fodder, though sufficient may be added to make the food palatable to the animals.

The pits or silos are not filled at once; after what may be cut in a day, or enough to fill the pit to the depth of about two feet, has been put in, it is allowed to remain for about 36 hours, is then thoroughly trodden down, and a similar deposit of freshly-cut fodder placed upon it, and so on.

Great importance is attached to the proper closing up when the pit is full. The successful keeping of this fodder depends upon exclusion of air.

M. Goffart prefers to cover his by first placing a layer of several inches of straw upon the surface; upon this he puts boards or planks laid crosswise, so that they may be taken out one by one, as the fodder is removed in feeding. The boards should fit closely at their edges, and upon them are to be placed weights to keep up a continuous pressure upon the mass below. For this purpose logs, stones, bricks, or other heavy material may be used, or old bags, or, preferably, boxes filled with earth may be made to serve as weights.

Mr. Potter prefers to cover the fodder first with straw for about two inches, and upon this a layer of clean earth at least six inches deep. After the earth has been in place a week or so, it is examined, and if any cracks are found they are to be closed with fresh earth. This examination should be repeated two or three times. Mr. P. does not find that any other weight beyond that of the earth is necessary, but suggests that should additional pressure be desired, it may be secured by increasing the thickness of the layer of earth.

If pits are made in the open ground, they should be covered with a thick layer of straw and several inches of earth, putting on as much as would be required in the locality for protecting turnips, etc.

We have had special reference to the preservation of fodder corn, but the process is equally applicable to other green fodder crops, such as sorghum, the various millets, etc. Where beets are raised in large quantities their leaves may be preserved, and where cabbages are grown for market there is a large amount of refuse leaves that could be thus put down—indeed the process is really a modification of that for making sour-krout.

Clover has long been preserved in this manner in Germany. A friend who has seen it fed, describes the clover as coming out as a brown, "cheesy" mass, which has a strong odor of fresh clover, and which the cattle eat with the greatest relish.

Mr. Potter, in the paper referred to, speaks in the highest terms of clover preserved in this manner, and says: "Among all our products in the Northern States there is none that will be more enhanced in value by this system than red clover." He advises the mixing of clover, or grass in which clover predominates, in the same pit with and through the fodder corn. He says: "The clover becomes, after the first fermentation, a putty-like mass, which fills the interstices of the coarser and more fibrous fodder, and thus makes the whole much more compact and weighty than it would otherwise be, while it improves the quality of the food."

In conclusion, we would say that we think that there is sufficient merit in this method of preserving green fodder, to make it worth while for our farmers to look into and experiment with. The trouble with every new thing is that some enthusiast gets hold of and advocates it in an extravagant manner, as the one thing that is to bring in the "good time coming." He finds followers, who abandon the old ways for the new, and not finding the new all that they expected, overlook the real merits it may have, and denounce it as a whole. Our advice is to "go slow." Try every new plan of promise to see how far it may be useful to you; examine its faults as well as its merits. Those leaders who start off with a band of music and a

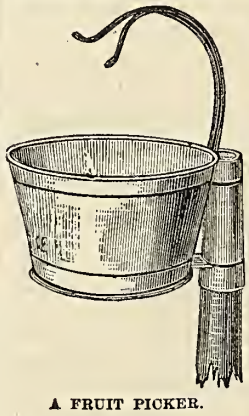
"hurrah, boys," have their use, but as guides are not so safe as those who work carefully and quietly.

Apples, Apple Juice, Cider, Vinegar.

This is most emphatically "the bearing year" with apples. Not only are well kept orchards in full bearing, but every supercannuated and half-decayed tree, and every scrub and chance seedling by the roadside, is loaded in a manner seldom seen in a lifetime. With this abundance it is evident that with apples there will be a glut in the market. There will be no room except "higher up," and those who send poor fruit to market had better use their barrels for fire-wood, and save the freight charges. There is always a certain demand to be met, but this year only the select fruit will supply it. In years of plenty, careful selection and neat packages tell. The almost daily inquiries as to fruit dryers show that preparations are being made to dry a share of this abundance, and we hope by this article to anticipate the inquiries that will soon be made as to disposing of the fruit in the various liquid forms. Apple juice, as it comes from the press, or "sweet cider," is liked by many, and we have inquiries as to keeping it in the unfermented state. Preserving powders are advertised, and some of these from their effectiveness in preserving fruit will no doubt keep fruit juice equally well. The majority will wish to preserve their sweet cider without addition, and these can treat it by the same method used in canning fruit. Heat the cider to the boiling point, bottle and cork it while still hot. When apple juice is exposed to the air, the natural ferment it contains causes a change to take place. The sugar in the juice is converted into alcohol, and carbonic acid is given off. This process may be carried on until all the sugar is decomposed, when it is "hard" cider. The fermentation may be arrested at the desired point by bottling, and sparkling cider will be the result. This, which is also called "champagne cider," can only be produced by bottling before the fermentation is quite finished. The best still cider is made from late ripening apples, when the weather is cool, fermented slowly at as low a temperature as possible, taking care to exclude the access of air; when fermentation has quite ceased, the cider should be racked off into a clean cask, and kept securely bunged or bottled. The great use of apples in this year will be to make vinegar. In the fermentation of cider, the sugar of the apple juice is converted into alcohol, and in making vinegar, that alcohol is changed into acetic acid. The conditions of this change are full exposure to the air and a high temperature. The richer the cider in alcohol, the stronger will be the vinegar, and the more slowly will the change take place. Ordinarily, the cider is put away in the cellar or some out-building, and in time, it may be two or three years or more, will be found to be changed into vinegar. Those who have heard of the "quick vinegar process," thinking it can be applied to cider; we are often asked to give a description of it. In this process, a liquid containing alcohol, usually in the form of cheap whiskey, is converted into vinegar in a few hours. But this is not applicable to cider, for in the fermentation of cider or other fruit juices, the change into vinegar is accompanied by the growth of a very low form of plant, "the mother," as it is usually called, and this would so clog up the apparatus of the quick method as to very soon put a stop to it. Still, the change of cider may be greatly hastened. Those who make cider vinegar on a large scale have a house especially for the work, and this is heated to about 70°. Vinegar can not be made rapidly at a much lower temperature. Exposure to the air is important, hence the casks are not filled, but only partly so, in order to expose a broad surface of the liquid to the action of the air. Exposure is increased by frequently transferring the cider from one cask to another, letting it run very slowly. Exposure can be promoted by allowing the partly formed vinegar to slowly run down a long trough, and also by allowing it to trickle over corn cobs placed in a cask, the cobs having been previously washed and soaked in good vinegar. Old vinegar acts as a ferment, and hastens the change, and the mixing of new and partly formed vinegar with a portion of old and strong vinegar helps the change. Another method to hasten vinegar making is to add yeast to cider, or what produces the same effect, the "mother" from vinegar barrels. The conditions for the most rapid conversion of cider into vinegar may be summed up: A temperature of at least 70°, all possible exposure to the air, the addition of old vinegar to the new or the use of "mother." It should be remembered that the weaker the cider in sugar the weaker will be the vinegar, and the more rapid the change.

A Convenient Fruit Picker.

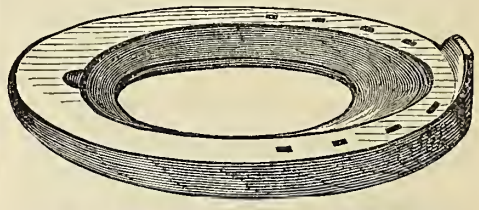
A leading daily paper, a short time ago, announced that some one had invented an implement for picking fruit, and went on to describe one of the oldest devices for the purpose, as if it were a new invention, and it was no doubt new to that writer. Fruit pickers have long been in use, and the records of the Patent Office will show that a great variety have been invented. Some of them are too complicated to come into general use. A fruit picker is only of use to bring down such fruits as cannot be reached by hand, from a ladder or otherwise, as those that grow in such positions are usually the finest specimens, and too valuable to be shaken off, it is worth while to take some trouble to secure them in a perfect condition. We have shown in a former volume that a fruit picker may be made from an old fruit can; the can, with a V-shaped notch cut in the upper edge, is fastened to a suitable pole, putting a lock of hay, some paper, or other soft material in the can to prevent bruising. By catching the stem in the V-shaped notch, the fruit is readily detached and brought down. But such a picker, though effective, is only a make-shift, and as it has to be lowered to remove each fruit, it makes hard work. A better picker, and one that is quite as good as any, is one invented by Jas. H. Ten Eyck, Auburn, N. Y., who sent the sample from which the engraving was made. It is a bottomless dish, 3 inches high, 5 inches across at the top, and 3¼ inches at bottom, made of tin, with a socket to receive a pole of convenient length. Above the edge there project two stout iron wires of the shape seen in the cut; these are close together below and diverge above, and serve as fingers to catch the stem and detach the fruit. The most important portion of the affair is not shown in the engraving; this is a bottomless bag, or hose, of cotton cloth, of the diameter of the bottom of the picker, to which it is attached by means of a small copper wire; it should be about two feet longer than the pole. If poles of different lengths are used, then the hose may be made longer by having extra pieces to be buttoned together. To use the picker, the pole is held in one hand, while the lower end of the hose is taken in the other, and turned up to about four feet from the bottom, thus forming a loop. A fruit is detached and drops into this looped part of the hose; the next one, if allowed to fall directly against the other, would bruise both; to prevent this, the hose is grasped by the hand that holds its lower end, closing it sufficiently to break the fall, and then releasing the hose to allow the fruit to pass down. When the weight becomes inconvenient, the end of the hose is turned down, and the fruit allowed to slip gently into a basket. Mr. Ten Eyck furnishes the picker complete, except the handle, to those who prefer to buy one rather than make it, but he has not patented it. He writes: "My object in sending it to the *American Agriculturist* is to give every one the privilege of making and using it," thus showing a liberal spirit which his brother fruit-growers will without doubt appreciate.



A FRUIT PICKER.

What is Founder?

In works on Veterinary Surgery, the trouble popularly known as "Founder" is described as *Laminitis*, or an Inflammation of the Foot. This disease appears in two forms. In the simple form the sensitive lamina of the foot and the equally sensitive sole are affected, while in the more severe form the bones of the foot are also included. Among the many causes of this disease, perhaps the most common is the severe concussion from fast driving on hard roads, over-exertion and overfeeding, and drinking cold water when the horse is heated. The treatment recommended by Dr. Williams, one of the most eminent authorities, consists in the administration of mild purgatives. Tincture of Aconite in small and repeated doses, as a febrifuge, with poultices to the foot in the early stages of the disease and cold applications later. He recommends also the application of Mr. Broad's shoes. Mr. Broad's plan is: "As early as possible, get lightly nailed on the feet affected, extremely stout, wide-webbed and long-bar shoes, made from iron about twice the ordinary thickness that the particular horse's shoes are made from; make them gradually thin from behind the quarters, so that the heel part of the shoes is wide and thin, and fitted rocker fashion, which enables the horse to throw his weight where he tries to, much better than he can in ordinary shoes or without any; that is, off the pedal bone on to the soft elastic tissues and tendon behind it, which are much less vascular and sensitive." Mr. Broad's shoe for foundered horses is shown in the accompanying engraving.



BROAD'S SHOE FOR FOUNDERED HORSES.

Success with the Currant Crop.

Our long-time correspondent, "W. C.," who is never led away by enthusiasm, gives us the following bit of experience. We may say that his place is on the Connecticut shore of Long Island Sound, and that his sales were made in one of the many prosperous small towns of that locality:—"I have been experimenting with the currant for the last five years, on a small scale, and the present season have produced 120 quarts on three square rods, and they were sold to a huckster at 12 cents a quart, wholesale. They retailed at 16 cents a quart, delivered in the village. At the wholesale rate, the amount of sales for an acre would be $768. The varieties were the 'Red Dutch,' 'Versailles,' 'White Grape,' and 'Cherry.' About half of the patch were 'Red Dutch' in full bearing, and the other part in various stages of growth—none of them in full bearing. The rows of plants were four feet apart, and the plants three and a half feet apart in the row. The plot had received a liberal dressing of Canada ashes two years before, which I think one of the best and cheapest fertilizers for all kinds of fruit. It also received last fall a top-dressing of manure from the pigsty and sea-weed from the shore, which was worked in with the fork this spring. The stools were thinned out severely this spring, and the ground kept in good cultivation until the fruit was set. The currant worm attacked the bushes soon after the leaves came out, and was subdued with a single application of White Hellebore mixed with water—say a large tablespoonful to eight gallons of water. Hardly a worm could be found alive the morning after the application. The mixture was applied with a garden syringe, which sends the liquid with such force that every leaf gets a drenching. Another crop of worms appeared in June, and the Hellebore made short work with them. Three things are to be observed in the application of this poison. 1. The White Hellebore should be fresh from the drug

store. 2. It should be thoroughly applied so as to wet every leaf. 3. The application should be made as soon as the worms make their appearance. The crop was remarkably clean and handsome. The cost of the production did not exceed one cent a quart."

Tim Bunker on Too Much Going West.

MR. EDITOR: I got your letter this morning just as I had got my scythe ground and was going to mowing on that Horse Pond lot, where the grass is breast high. We use the hand-scythe occasionally just to keep our hand in. Three young men were waiting to strike in with me, calculating to give the old feller a sweat afore noon; so you see I could not possibly stop to write anything until that grass was in the swathe, and them young fellers were so tinkered out that they wished they were where the grass was lying down. That Horse Pond lot continues to be an eye-sore to Jake Frink, but is lovely as a rose to the rest of Hookertown. Ye see, it has been giving me three ton to the acre regular every season for nigh on to twenty years, and has been preaching tile-drain and high farming to all Hookertown and the rest of mankind, through the *American Agriculturist*. It may not have been worth much to the rest of mankind, but it was a grand job for me, and has paid enough sight better than any bank stock, or Government bonds, I ever saw, twice over. It *was* waste land; it *is* a productive meadow, making money for me every day in the year. Jake never seems to have forgiven me for the change wrought, and every season, when the purple heads of the herd's-grass are blooming and waving in the breeze, he seems to be afflicted with something worse than hay fever. [The Squire still uses the early New England name of "herds-grass" for what is called Timothy in other parts of the country, and at present the name is in frequent use in New England.—ED.] I hope he'll get over it by and by. However, I do not lay up anything agin him; I am ready to do him a kindness any time, especially to buy another Horse Pond lot whenever he has one to sell.

There is a deal of talk now about going West, as there has been for the last fifty years, and I am about tired on't. If I read the census statistics aright, we have had enough of this business for the good of the older States, and it is about time Greeley's advice, "Go West, young man," was laid on the shelf. Up in Windham County, every farming town shows a loss of population in the last ten years, and this is true of every rural district in the State, and, probably, true of all the older States. Taking the whole State through, there has only been an increase of about 60,000 in ten years, and this is wholly in the cities and manufacturing towns. Many of the farming towns have less population than they had fifty years ago. Meanwhile, Connecticut has swallowed Greeley's philosophy whole, and is sending off millions of money every year, with her sons and daughters, to the far West. There is a clean broad belt of them all the way to the Pacific coast. Connecticut capital and muscles, invested in California soil, raises wheat and sends it back to feed her people. We import in large quantities almost everything that can be raised on the farm—beef, pork, butter, cheese, mutton, lambs, hay, vegetables, and fruit. Not a quarter of the corn consumed in Hookertown is raised here, or on Connecticut soil; it comes up to Shadtown by the sloop and schooner load—much of it already ground, and the balance ground in our mills and sold to livery stables, to farmers even, and every one who has use for corn meal. The family pig in the village, with few exceptions, is fattened on Western corn. We consume immense quantities of Western beef—fresh, corned, canned; Western pork and lard, cheese, butter, etc. While this is the case, farming property is very generally getting cheap. Farms in many parts of the State can be bought for a little more than what the buildings cost fifty years ago, or less. The buildings often times are in fair condition, enough sight better than a dug-out or the cheap frame dwellings that Eastern men are content to live in on the prairies. These old farms can be bought for from twenty to thirty dollars an acre, as the advertising agencies show. They furnish shelter, fuel, and food for the family—the three great necessities. They are in the midst of good markets near at hand, good schools, churches, and good neighbors. The climate is about all that can be desired for Connecticut people. There may be enterprise, adventure, and romance in going away from home, but in many cases I do not believe it pays. Some men draw prizes, but a great many, blanks. I have seen too many men come back, heart sick and body sick, poor and discouraged, to take much stock in far-off homesteads.

I'm ready to give a reason for the faith that is in me. One grand reason offered for going West is lack of room here. Well, it is the easiest thing in the world to double the cultivated acres of Connecticut by going deeper into the soil. That two acres of Horse Pond did not pay the interest on ten dollars an acre; it now pays the interest on two hundred, easy; it virtually added twenty acres or more to Connecticut farm lands, and became a profitable and safe investment, as long as it is looked after. Now, we have, in almost every town in the State, large tracts of land that only need draining to make 'em yield double. Oftentimes draining will quadruple their value. But if only doubled, they would carry twice the men and twice the stock they now carry. There are large tracts of stony land, now in pasture, that can be cleared and made profitable; there are still larger tracts of sandy and light loams, called worn-out lands, that only need capital and *brain manure* to be made profitable. A small part of the capital that goes off with our sons and daughters, and is spread out by them all across the Continent, if concentrated upon our own acres, would quadruple its agricultural productions and enable us not only to feed our own population, but to export to other States. It is about time Connecticut attended to its own business and turned the tables on the West.

There is nothing like the "*Argumentum ad hominem*," Mr. Spooner says, and I guess he is about right. Take my John's case. He went to the war, you know, and came home with his head full of notions, and nothing would satisfy him but he must go away from home. I knew there was nothing like experience to teach people; and rather favored his going. Well, he went to Kansas ten years ago, took up land, pre-empted, and homesteaded, lived in a dug-out, built a frame house, raised wheat, corn, oats, and potatoes, for about four years, on soil from nine to ten feet deep; no end of crops, but poor market; got discouraged; went to clerking; made some money, but spent more. After ten years hard work, under more than average good circumstances, he comes home this season with a wife and two children, and two thousand dollars indebtedness above the value of his real estate. We cannot tell, of course, what is in the future, but the result of ten years' work, in the prime of life, is rather a poor commentary on the wisdom of his course. In this short life a man ought to post the books once in ten years, and look results in the face. Half the money he has spent and earned in the last ten years, if invested here in Connecticut, would have given him a good farm, a good paying business for life, without any debt. From the Hookertown outlook and observation, we think there is quite too much talk about going West, stick by the old homestead, deepen the soil, use brain manure, and prosper.

Yours to command,

TIMOTHY BUNKER, Esq.

Hookertown, July 10, 1880.

[Squire Bunker has so much sound sense that we always allow him to "say his say," even when we do not altogether agree with him. In view of his son's experience, we can hardly blame him for taking the view of things that he does. *If* every Connecticut farmer were as skillful, as wide awake to improvements, and so well understood "manuring with brains," as he does, the Squire's advice for the sons to stay on the old farm would have more force. But the Squire knows many farms in Hookertown that are capital places to go from. The fact is, there is much to be said on both sides; it would be better for some to stay, and better for others—far better—to go West or anywhere else. We advise the Squire to hurry up his fall work and take a Western trip himself. He will find there grand farms, such as he never dreamed of, and splendid openings for enterprising young men from the Eastern States, and from the Western ones, too. Still he is right about the capabilities of Connecticut and of the other older States. There is many a horse-pond to be drained, and have its value increased many fold. There is many a farm that needs only "manuring with brains" to have its product doubled, to the profit of those who do it. This country is so large that there is room and work for all the Squire Bunkers who know how to stay at home in the East, and the young men who, whatever may be said, will "go West."—ED.]

Science Applied to Farming—LX.

Among Our Field Experimenters.

I have lately had the pleasure of visiting several of the gentlemen who are making the field experiments with various kinds of artificial fertilizers proposed by the *American Agriculturist*.

Mr. Charles Fairchild, of this place, is now working the fourth season. His trials on small plots, confirmed by experience in his field practice, indicate quite decidedly that he can get good crops of corn, potatoes, grass, oats, and wheat, with a mixture of fine bone-dust and muriate of potash. He buys the bone-dust at a neighboring bone-mill, very finely ground, at $32.00 per ton. The muriate has cost this season some $40.00 per ton. He uses, as I recall, from 150 to 250 lbs. of the potash salt, and 200 to 400 lbs. of the bone-dust per acre. Reckoning actual cost of fertilizers, labor, interest on value of land, and all other expenses, he calculates that his corn costs him 40 cts. per bushel. Some of his neighbors adopted his plan last season, and had a like experience. I confess I am a little surprised at his good success in growing wheat with fertilizers containing no more nitrogen than the very small amount found in the bone. Nor am I by any means certain that for wheat, oats, and for potatoes also, it would not be more profitable for him to use nitrogen in Peruvian guano, fish scrap, or some other form. It will be interesting to learn how long the supply of potash in the potash salt and phosphoric acid and lime in the bone will continue to bring him good crops.

Mr. Fairchild, in co-operation with some other gentlemen, has undertaken a very thorough study of these questions by a series of "Special Nitrogen Experiments" similar to those described in the *American Agriculturist* for May last. He has laid out a piece of nearly two acres in some twenty-five parallel plots for as many different fertilizing materials and combinations, leaving unmanured spaces between each two manured plots. He proposes to continue the experiment through a series of years, following the crops in a rotation which he thinks may prove profitable on his land. The labor will be considerable, but the results cannot fail to be very valuable for himself and for the public. As he tersely puts it, the application of what he has learned has made the difference between good profit and actual loss in his farming, and he is ready to do more work in the same line.

Mr. Chester Sage, of this place, has been experimenting on a plan similar to Mr. Fairchild's, as the readers of the *American Agriculturist* have noticed from the reports of his experiments, and has reached similar results. Potash, in potash salts, and phosphoric acid in bone and superphosphate, bring him better crops than his best barn manure, and at relatively very small cost. And I must say that I have been very much surprised to find how many farmers in this region have had like experience in their experiments and in their field practice. I had the opportunity some days ago to make a visit to see some interesting

Experiments on the Farm of the Maine Agricultural College,

under the direction of my friend and former assistant, Prof. W. H. Jordan, successor of Prof. Farrington in the Agricultural Department of that Institution. Several of the field experiments made by Professors Farrington and Jordan have been

detailed in the *American Agriculturist*. For corn, potash and phosphoric acid together have proved most profitable; but for potatoes and turnips the

Fig. 1.—FIRST ROOTS OF CORN PLANT.

addition of nitrogen has seemed requisite for the best results. I had quite a talk with Prof. Jordan about corn-growing with commercial fertilizers. He is persuaded that corn may be raised with profit in our older States by the use of fertilizers supplying phosphoric acid and potash. But in cooler regions, like Eastern Maine, he doubts whether farmers generally can afford to sacrifice grass, which generally does well, for corn, which sometimes fails to mature. He is persuaded, however, that where the climate favors corn, it may be grown with the cheap "mineral" fertilizers, as stated above, and thus enabled to gather its nitrogen from soil and air; that if corn and stalks are fed out on the farm, this must prove a very economical way to make manure, and that it is much better to have the corn get the nitrogen for itself, than to buy it at from 20 to 30 cents, or more, per pound in commercial fertilizers, as so many thousands of farmers are doing. I am sorry that lack of space forbids my mentioning in detail the experiments and experience of a number of other gentlemen whom it has been my good fortune to visit. Mr. W. D. Bartholemew, of Putnam, Conn., whose name is already familiar to the readers of the *American Agriculturist*, is continuing his field work this season. With corn, he, too, finds the only artificial fertilizers that do much good are those that supply phosphoric acid, bone and superphosphate; but with potatoes, potash salt and nitrogenous materials, guano, sulphate of ammonia, nitrate of soda, etc., are profitable; and with corn, by far the best results come with farm manure and superphosphate together. Indeed one thing I notice in the talk of all the experimenters is that along with the more rational use of artificial fertilizers, they are likewise studying, and very earnestly too, how best to increase the production and improve the quality of their farm manures.

Letters from Experimenters.

Mr. H. M. Swift of Chestnut Ridge, N. Y., in speaking of his repetition this season of his last year's experiments says, "A great desideratum in

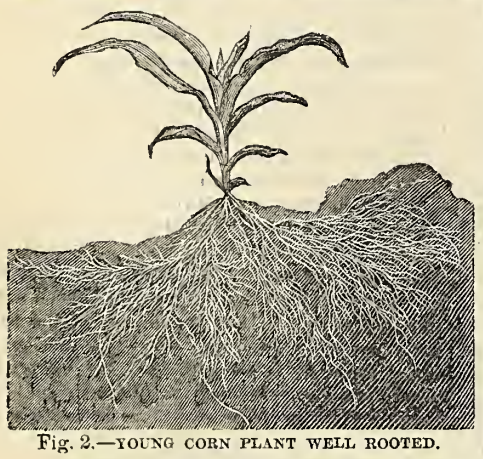


Fig. 2.—YOUNG CORN PLANT WELL ROOTED.

my vicinity is a crop to follow corn. Spring wheat never did well with us, barley is very uncertain, and oats, formerly the best of all our farm crops, have for some years been a failure. The straw is long enough but always more or less rusted and the grain light." He queries how far the rust is due to climatic or other conditions beyond our control, and how far to defects in the soil which fertilizing and tillage may overcome, and is attempting to get some light upon the problem by experiments. I hope he will favor us with his results. One difficulty, in fact one of the greatest difficulties with field experiments, is in the disturbing causes which affect the yield on the several plots where the comparative trials are made. Besides original variations in the depth, texture, water supply, and composition of the soil, there are, as Mr. Swift suggests "very unexpected differences within limited spaces due, in lands long cultivated, to the droppings of pastured stock, to the foddering on the ground of a stack of hay, to the deposit of a load of manure or perhaps to the use of some fertilizer which, producing no immediate results, in time, with change of culture and appropriate crops, show its effects long after the cause is forgotten." Mr. Swift adds further on in his letter, and, as it seems to me very pertinently, "I think I have generally aimed at this residuary fertility, if I may so call it, rather than the first effects."

Fig. 3.—THE ROOTS OF CORN PLANT AT A LATER STAGE.

Mr. J. W. Pierce, of West Millbnry, Mass., who is also repeating his last year's experiments, writes: "The nitrogen and potash look much better than last year's, probably because I applied them broadcast. Last year I put part of them in the hill, and they injured the germination of the seed." I quote this observation of Mr. Pierce, because it touches a very important matter. A vast deal of harm is done in the use of concentrated fertilizers by putting them too near the seed. The seed, the just germinated plant, and the roots suffer, and the growth of the plant is checked in consequence. Farmers often think they must pnt the fertilizer close to the plant, or it will not get the benefit of them. They do not realize how widely the roots extend, and what a capacity they have for gathering up the nourishing materials that are diffused through the soil, and how much better it is to supply these materials so that the roots may thus gather them from the soil all about them in the natural way. This suggests a very important subject:

The Roots of Plants.

The roots of a plant give it mechanical support during its growth, and gather for it food, with water, from the soil. When this work is done and the crop is gathered, the roots remain to contribute their own substance to supply food for the succeeding crop, to hasten, through their decomposition, the processes by which the plant food of the soil is made available, and finally to improve the texture of the soil. Roots are more important agents in the growth of our crops than most people think. Every farmer and gardener ought to understand, and would work to much better advantage if he did properly understand, how roots grow and do their work, and hence how the plants should be cared for so as to best promote the development of the roots, and in consequence the growth of the whole plant; its fruit, grain, etc.

The Roots of Indian Corn.

A German investigator, Dr. Thiel, has made some very interesting studies of the roots of plants, and has published several series of photographs of whole plants, tops, and roots, just as they grow in the field. From a series of these which illustrate the development of Indian corn, or Maize, as it is generally called in Europe, our engravings are taken. To get these photographs, the youngest plants, with the roots freed from earth, were put in water, as nearly as possible in the natural position, and photographed. For the others, trenches were dug in the sandy soil in which the plants were growing, and the roots laid bare. The engravings are therefore from nature, and show just how the roots are developed as the plant grows; how they extend through the soil and distribute themselves in the upper and lower layers. Figure 1 is the very young plant; figure 2 is a little further developed. Figures 3 and 4 are older states of the plant. Figure 3 being a view from the side, showing the extension of roots in breadth and depth, and in figure 4 we see the corn plant in the same position some weeks later in its growth. I regret that Dr. Thiel has given us no view of the matured plant among his photographs. I mistrust the reason is to be found in the fact, that in the climate of North Germany, corn does not generally mature very well.

The roots of corn extend a great distance laterally and penetrate to quite a depth in the soil, though not so deeply as do many other plants, such as clover, lucern, or even beets. But at the same time, as the engravings show, the larger share of the roots are near the surface and here most of the feeding is done. The roots that reach deepest into the soil serve to bring up a supply of water when the upper strata are dried as in times of drouth. I should like to add a

Request to Our Experimenters.

We hear various and widely conflicting statements as to the distance and depth to which roots go into the soil. Can not some of the gentlemen who are about to harvest the experimental crops trace the course and extent of the roots, and give us their results in figures and such description as convenient? How far do the roots of corn, potatoes, and other crops, reach; how deep do they

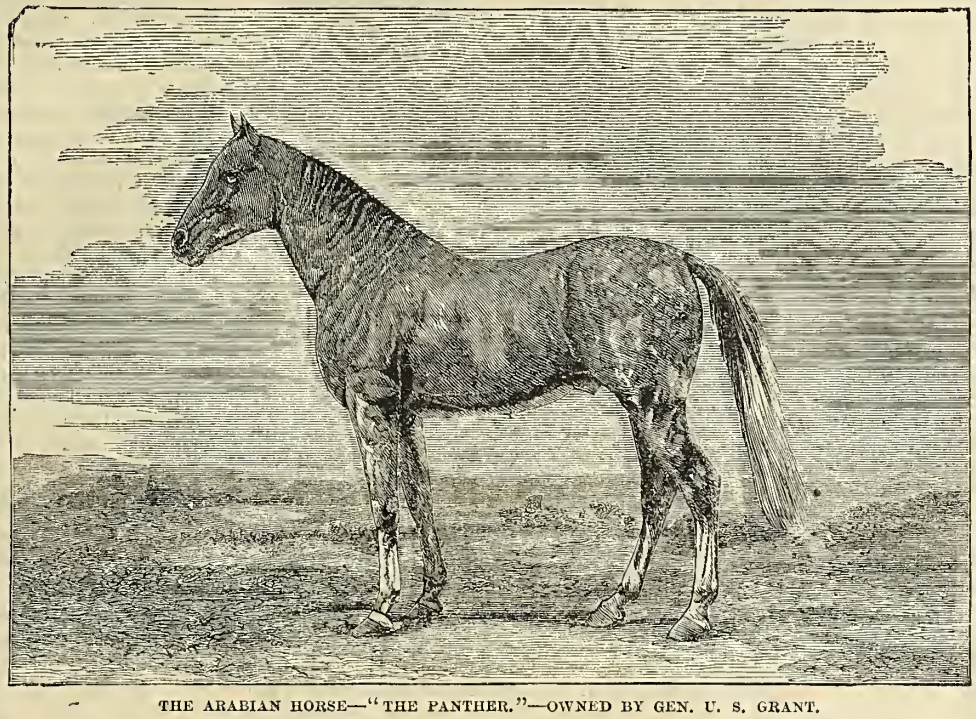
Fig. 4.—ROOTS OF HALF-GROWN PLANT.

penetrate, and how far down is the feeding by the roots mainly done? W. O. ATWATER,

Wesleyan University, Middletown, Conn.

The Arabian Horse: "The Panther."

The careful investigations of Ali Bey result in establishing the fact that there are six distinct breeds of the Arab horse at the present day. Some of these are confined to limited portions of Arabia, and are little known to the outside world. Another breed, the "Kochlani," not mentioned by Ali Bey among the six, is often found in treatises on the horse, and is supposed to have descended from the stud of Mahomet. The tradition of the foundation of the "Kochlani" breed, which "Stonehenge" is inclined to believe, is but another name for a distinct breed in the eastern part of the desert, is as follows: The Prophet, desiring to select mares for his stud, had a number of them that had served as chargers, kept for some time without water. When mad with thirst, they were set at liberty, and at the moment when they were near the desired water, the war trumpet was sounded for a charge. Five of the mares abandoned the water, and in great excitement galloped to the spot where they expected a charge was to be made. These five high spirited animals were thus chosen as the foundation of a stud from which a famous race of Arab horses has sprung. Whatever of truth there may be in this tradition, it is in accordance with the accounts of the extreme care with which the Arab horse has been bred. It is asserted by travellers in the East, that existing pedigrees can be traced back for 500 years; and, among the choicest animals, a certificate is always made out by the local authorities, within seven days after the birth of the foal.



THE ARABIAN HORSE—"THE PANTHER."—OWNED BY GEN. U. S. GRANT.

The characteristics of the high-bred Arab horse are well shown in "The Panther," presented in the accompanying engraving, made from an instantaneous photograph by Schreiber & Sons. "The Panther" was bred by the Turkish Sultan, at Constantinople, and presented by him to General Ulysses S. Grant, while he was on his late tour around the world. He is a dapple gray, 15¼ hands high and eight years old. The full, square head, and heavy jaws, with the fine muzzle, are well shown in side view, but the remarkable width of forehead is not appreciated unless seen from the front. The eye of the Arab horse is "full and soft, sparkling with animation on the slightest excitement; the ear is small; the neck arched; the shoulders oblique, but muscular; the withers moderately high and thin; the chest rather light in girth, but the back ribs deep in proportion, and the hips, though narrow, well united to the back by a rounded mass of powerful muscles."—The large forehead and full development of brain, indicate that the Arab horse stands high in docility and intelligence. He is possessed of a fine temperament, and when kindly treated, is extremely docile; but when the treatment is harsh he rebels, and will fight for his just rights until he wins or until death ends his troubles. We are in this country much indebted to the Arabian for the present high position held by our horses; first, for the prominent part it played in elevating the English horse, from which our stock was primarily derived, and secondly, by the infusion of its blood through direct importations. It is not exaggeration to say that the Arab horse, in its native country, is one of the family of his owner. The history of its treatment at home has not been without its good effect in teaching us the value of care in breeding, and of kind and familiar treatment of the horse from birth. Such are the intelligence and docility of the animals when they are allowed to properly develope, that it is not to be wondered at that some tribes believe that the horse, as well as its owner, has a future existence, and that both will enjoy the "happy hunting grounds" of the hereafter.

The Polar Hare.—(*Lepus glacialis.*)

Naturalists enumerate at least fourteen species of *Lepus* or true hares, as existing in America north of the tropic of Cancer. Among the handsomest, and perhaps the most interesting members of the genus is the Polar Hare (*Lepus glacialis*), a single specimen of which is represented in the accompanying engraving. It is a native of the far north, and according to Audubon it is to the cold and inhospitable regions of the north, the rugged valleys of Labrador, and the wild mountain sides of that desolate land, or to the yet wilder or more sterile countries that extend from thence toward the west, that we must resort to find the large and beautiful Hare we have now to describe; and if we advance even to the highest latitude man has ever reached, we shall still find the Polar Hare, though the mercury fall below zero, and huge snow drifts impede our progress through the trackless waste. Both trappers and Indians in that cold, thinly inhabited and sterile region, are sometimes saved from certain starvation by means of this Hare. One of the most interesting features of the Polar Hare, though not restricted to it, is the change in the color of its coat to correspond with the surroundings produced by the change of seasons. The color of the Polar Hare, in summer, is of a grayish brown, with black ears, bordered with white, the breast being of a bluish gray. This color is nearly that of the earth and surrounding rocks, and serves to conceal the hare from the keen eyes of its greatest destroyers, the Golden Eagle and the Snowy Owl. As the brief summer closes, the covering of the hare becomes whiter, and soon is pure white, with the exception of the tips of its ears. The brown color of the summer garb would make the hare conspicuous on the snow, and it could be easily seen for a great distance, but as it is, the white mantle becomes a cloak of safety. In length of body, the Polar Hare varies from twenty to thirty inches, and its weight from seven to fourteen pounds. The food in summer consists largely of berries and different kinds of small tender herbage, while in winter the tops of dwarf willows and tall grasses are eaten. "It seeks the sides of the hills, where the wind prevents the snow from lodging deeply, and where even in the winter it can procure the berries of the Alpine Arbutus, the bark of some dwarf willows, or the evergreen leaves of the Labrador Tea plant." The characteristics of the Polar Hare are much like those of its more Southern cousins—a peculiar and interesting combination of timidity and shyness. It is not

THE POLAR HARE (*Lepus glacialis*).

easy to get within gun shot of them, as they constantly make off in rabbit fashion, to a safe distance, where they sit until their pursuer comes almost within range, when they move on again. They are much frightened at the long shadow of the hunter which the low Arctic sun casts upon the snow, and in this respect are like deer, and the fact must be borne in mind by the hunter, if he would be successful in capturing his timid game.

All those who have eaten the flesh of the Polar Hare agree that it is fine in flavor, far surpassing that of other hares. The species can be domesticated and become handsome tame pets. Captain Ross says, of one he had: "It could not endure to be carressed, hut was exceedingly fond of company, and would sit for hours listening to a conversation, which was no sooner ended than he would retire to his cabin; he was a continual source of amusement by his great sagacity and playfulness."

From Editorial "Notes by the Way."

An Ice-House Above Ground.

Simple—Easily Constructed—Effective—Ice for 50 Cents a Ton.

Ice is not only a comfort and a luxury, but it is very useful on every farm—particularly where milch cows are kept—as well as in every house. A village friend of ours, who buys his ice from the dealer's wagon, asserts that his ice bill is fully met by the saving in coal and food. He argues thus: Food, especially meats, keeps fresh and good so much longer in the ice-chest that cooking is required far less frequently in hot weather, while very much less food becomes stale and wasted—a double economy. Where ice is abundantly supplied by regular dealers at low rates it is, perhaps, usually cheaper to buy the amount needed for ordinary family use. But where much is required, and especially where the ice wagon does not come around every day or two, as is the case at country residences, it is best to have one's own ice-house. And it is but a small matter to get up one that will hold 15 to 25 tons, and keep it well through the season.—As an illustration, we describe one we recently saw on the farm of CHARLES H. WARNER, in Lima, Livingston County, N. Y. It stands on level ground, entirely above the surface. It is a new one erected in place of a similar one that has been serviceable for 15 or 20 years. As this one cost less than $30, all told, and is filled by the farm help when there is little else to do, we may reckon the annual expense, interest included, not over $5, or at most $10, for 16 to 20 tons of ice—enough to give a large supply, say 125 lbs. a day, from April 1 to December 1. — *Description:* The base (fig. 1) is a frame of 8 by 8-inch hewn or sawed timber, forming a square 12 by 12 feet. This is laid on a stoue foundation, or on corner posts set in the ground, and filled uuderneath with stones and mortar if accessible, or earthing up will answer. A similar square frame is made for the plates, and this is supported at the four corners with 8 hy 8-inch posts, eight feet long, and by 2 by 8-inch studs, say three on each of three sides, and two as door posts on the front side. The outside (fig. 3) is covered with inch boards. Rough pine boards, somewhat knotty, will answer. Mr. Warner's cost $16 per 1,000 feet. The cracks may be covered with narrow battening. Mr. W. thinks the battens not necessary. Inch boards, laid horizontally, line the *inside* up to the plates, and the 8-inch space between is filled with sawdust. The flooring is simply boards laid upon the ground or upon small cobble-stones. The roof is only one thickness of inch boards, with batten pieces over the cracks, and is supported by three horizontal strips on each side, laid across rafters. The rafters are scantling, beveled and nailed together at the top, and set into or firmly spiked to the plates. About half of the middle of the ridge is cut out, leaving an openiug 4 or 5 inches wide, and over this is a cap, supported by a saddle piece at each end of it, leaving an opening on each side under it for ventilation. The cap extends far enough over to keep out the rain. The doors are a single thickness of inch boards. The outside boards can be rough, or planed aud painted to correspond with the house or other buildings.—When filling the house, 5 or 6 inches of straw and sawdust are put on the floor, and the ice packed solidly on this, but a space of 6 or 8 inches is left on all sides, which is packed in with sawdust. Any spaces or cracks between the cakes of ice are also filled with sawdust. Short pieces of horizontal loose boards support the sawdust inside the door. These are put in as the filling proceeds, and taken out as the ice is removed from time to time. The ice is filled in some distance ahove the plates, and finally covered over with a foot or so of sawdust. This suffices to keep out the sun and air heat. Experience proves that this surrounding of sawdust on all sides will keep the ice well during the entire summer season.—Those not having access to lakes or ponds, can easily make an artificial pond iu a prairie slough, or other depression of ground, large enough to furnish ice for filling a small house like the above. In this, there is a mass of ice say 9 feet square, or about two and one-third tons for each foot in hight.

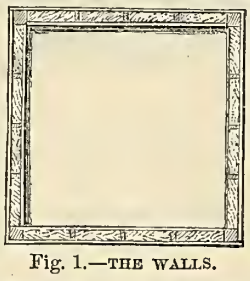


Fig. 1.—THE WALLS.

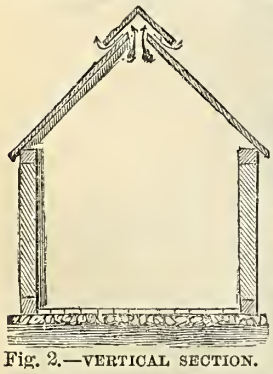


Fig. 2.—VERTICAL SECTION.

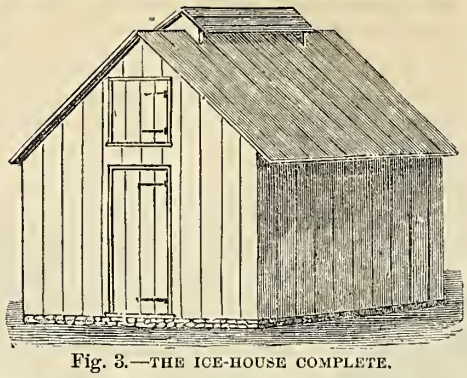
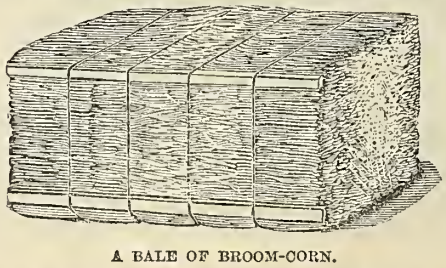


Fig. 3.—THE ICE-HOUSE COMPLETE.

Harvesting Broom-Corn.

The quality and therefore the value of the brush of the Broom-corn depends in great measure upon the time at which it is harvested. The most successful growers agree that the cuttiug should begin "as soon as the blossoms begin to fall," or in other words at that time when the seeds begin to form. At this time the brush is of the best color, heaviest, and the most durable. The manuer of harvesting differs somewhat with the variety and whether a particular color is sought or uot. Some time before the brush is cut, the broom-corn stalks are lopped, which consists in going through the rows and breaking down the tops a foot or so below the base of the brush. The object of this operation is, first, to keep the brush straight, and secondly to accelerate its ripening. The top of the plant still retains sufficient communication with the stalk to allow of a thorough maturing of the brush.



A BALE OF BROOM-CORN.

The tabling consists in breaking down the stalks at ahout 30 inches from the ground. Each two rows are tabled together, the stalks of one row heing crossed diagonally upon those of the other, thus making a sort of a "table" with intermediate spaces affording room for the cutters. The cutting is done with a sharp knife, the stalk being severed six or eight inches below the base of the brush, and therefore some distance above the point where the stalk was lopped. The brush should be cured under cover, as exposure to the hot sun renders it brittle and the elasticity characteristic of a good broom is lost. A shed of any sort will do for small quantities; for larger, a drying house will be necessary. The next step is the removal of the seed, which is done by a long toothed curry-comb, a hatchel, or if there are larger quantities, a cylinder scraper is to be employed, run by horse or other power. The brush is then put on racks to dry, where it remains until thoroughly cured and is ready for haling. Much depends upon the character of the baling; in fact, all the difference between a good profit and no profit. Compact, square bales, with even ends, and the brush so put in that it will come out straight, must be made, or only a low price will be obtained. The proper size of a bale is 3 feet 10 inches long, 2 feet wide and 30 inches deep. It should be made as shown in the accompanying engraving, stout laths heing placed at the corners and the whole is securely bound by a number of wires which pass around the bale.

The Sheep Bot-Fly.

There are a number of species of bot-flies, members of the same family (*Œstridæ*), and are interesting from the peculiar localities which they select to pass their larvæ state, and the trouble which they thereby cause the animals within which they reside. The ox bot-fly plants its eggs in the skin of cattle, where the larvæ grow to large size. The horse bot-fly selects the stomach of the horse for the place of its development, while other species inhabit the internal organs of mice, squirrels, rabbits, etc. The Sheep Bot-fly, or Gad-fly (*Œstrus ovis*), selects the nostrils of its host as the most fitting place for the abode of its young. Figure 1 represents the female fly, which is brown, and yellow-banded. As soon as the eggs hatch, the larvæ make their way up the nostrils to the frontal sinuses, where they attach themselves by little hooks that are abundant around its mouth, and continue to feed upon the mucus always found in the location selected. This entrance takes place in early summer, and the larvæ, which are of a creamy-white color while youug, gradually attain their full size and a dirty brown color. In this state the grub remains until the following spriug, when it loosens its hold, aud passes down the nostrils, causing great irritation and discomfort to the sheep. Figures 2 and 3 show the larvæ with the upper and lower sides, respectively, in view. After dropping from the animal, the larvæ burrow iuto the ground, and pass into the inactive pupa state. They remain as chrysalids for six or eight weeks, and then come forth as two-winged flies, in appearance much like the commou house-fly, but somewhat larger. The flies soon provide for a new generation by depositing eggs in the nostrils of the sheep. As to the injurious effects of the Bot-fly, it may be said that opinions differ greatly. It is probable that many cases of death assigned to the bots, have resulted from other causes. However small the danger may be, the annoyance to the sheep is enough to lead flock-owners to prefer that their flocks may be exempt from attacks. The remedies fall naturally under these heads: Change of situation, prevention of the deposit of eggs, and removing the larvæ. Dr. Thomas, in his 9th report as the State Entomologist of Illinois, in his article on this sub-

Fig. 1.—FEMALE FLY.

Fig. 2.—UPPER SIDE.

Fig. 3.—LOWER SIDE.

ject, says: "I am satisfied that high, dry, firm, open, airy situations will be found much less infested with this pest than low, moist situations, where there is thick undergrowth, and close, hot air." The most common method to prevent the deposit of eggs is the tarring of the nose, which should be done at frequent intervals during the fly season. After the grubs or larvæ are once seated in the nostrils, it is a difficult matter to remove them. The use of some irritating substance that will produce violent sneezing is, perhaps, the only method to be pursued.

Among the Farmers.—No. 56.

BY ONE OF THEM.

Since I wrote last, I have been at a plow trial. The managers of the trial were conscientiously earnest about having a trial of plows which would develop their best points for general utility. I am rather old-fogyish, and stick to an old-fashioned 19½ plow (with a reversible point, however,) as the best plow I know of for my light team and gravelly, stony soil; but this did not hinder the Secretary from asking me to come out and try the dynamometer on the plows. I did that, and a good deal more, for I watched that whole trial, and criticised it well—in my own mind. Not being a member of the committee, but only an adjunct, I discussed nothing except the draft with them, and do not know which plow won the prize. The trial was in this wise: Each plow had its plowman, who drove his own team, and who was coached by his principal and all his friends. The teams were all started at about the same time, making a sort of a plowing match of it. Each plow-man plowed a quarter of an acre of beautiful flat, mellow land. The first half was laid with flat furrows; on the rest, the furrows lapped. At the close, the plows and teams all came to a plot selected for the purpose, where the draft of the plows was tested. I was surprised at several results. We tested all the plows first with a "jointer," or "skim"—that is, with a small plow attached like a coulter to the beam. The jointer cuts less than half the width of the plow, running only about two inches deep, and folds half the sod over upon the other half, and then the whole is rolled over into the furrow by the plow. After this, the plows were tested with coulters. I was surprised to find that all the plows showed less draft with the jointers than with the coulters. It was shown also that, in this soil—and it is probably true of other soils, except those full of very tough roots—a mere scratch of the coulter cutting possibly an inch and often less, answered every purpose, enabling the plow to turn a true, straight-edged furrow, and with notably less draft than if the coulter were set as low as is customary. I have always felt as if the coulter ought to be in the ground "deep enough to do some good," never having the idea that an inch-cut was just as good, and better, than a three or four-inch one, besides making a saving of at least 50 lbs. in the draft, but such seems to be the case.

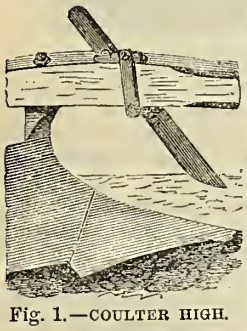


Fig. 1.—COULTER HIGH.

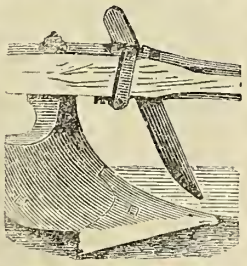


Fig. 2.—COULTER LOW.

It is clear that it takes much less power to draw a coulter if it cuts but one inch, than one cutting four inches. Now, the coulter is, or should be, sharper than the edge of the mould-board in front of the standard, and, it would seem, should cut the sod and grass-roots much easier, but it appears that the advantages of the deep-cut are more than offset by the power required to force the coulter through the ground to that depth. Let us suppose that figs. 1 and 2 represent coulters attached to plow-beams. Fig. 1 is supposed to cut an inch, and is set where the furrow-slice just begins to be lifted by the share, driven as a wedge under it, which is the proper place, and varies with the depth. Figure 2 shows a coulter set forward, and considerably deeper, while Fig. 2 shows one nearly perpendicular. The lightest draft occurred with a coulter set as shown at fig. 1. Doubtless the roots part easier for being slightly strained, and the very small depth of the cut is sufficient. Fig. 2 is a faulty position, both as to depth and angle. We were discussing the question why it was that the jointer showed less draft than the coulter, and came to these conclusions: In the first place, the cut of the jointer is very shallow, hence consumes little power; then the weight of the slice when turned is laid over upon the outer edge of the main furrow-slice, as shown in figure 3, relieving the plow of its weight where it would have to lift it, and placing it where it helps by its own weight in the turning. The figures indicate the lift of the furrow-slice and the corresponding position of the outer edge.

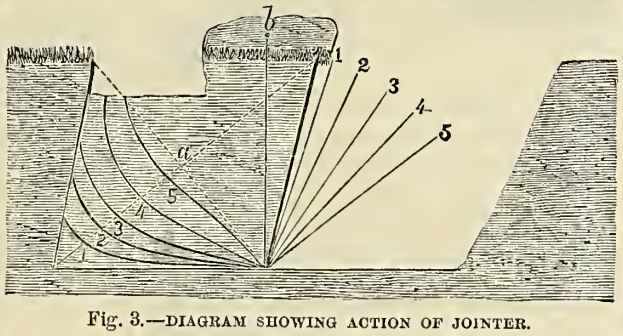


Fig. 3.—DIAGRAM SHOWING ACTION OF JOINTER.

In most soils it requires half as much again power to draw a plow seven inches deep as to draw it six. This we saw illustrated in the difficulty the committee had to make the plowmen hold to a seven-inch furrow, and the difference it made in the indications of the dynamometer whether or not that depth was kept. When two inches are taken off the top, of course, that is to a degree equivalent to plowing only five inches deep. The plow *detaches*, *lifts*, *twists*, *turns*, and in these operations *crumbles* the furrow-slice, and the thinner it is, the more easily will each one of these operations be done.

As to the Testing of Plows.

As it was, it was interesting, but so is a horse-trot, no matter how much jockeying is going on. It was very funny to see how well the plowman and his principal understood each other

"Put her down there—put her down, beam deep if they want it so," said the principal; "there, that's seven inches—that's eight, easy enough. How does that read on your "dymoneter."—"Only six and a half deep, anyway," said the committeeman, "and there's no use in taking down the indications of the dynamometer."

"Let her go down, then; raise the wheel; let out your trace-chains: get her down some way," repeats the principal, just as honestly as if he meant it; but the shrewd plowman only pretends to do what he is told, and bears down hard enough on the handles to more than balance the difference. So it went, more or less, but enough to vitiate the results, and so it will always be, if the plowman is personally interested in securing unfair results. I understand that the committee suggest that, if another trial be held, the work shall be done before the committee inspect it, under the direction of the superintendent, or of some suitable person, of course. This may be very wise, for it is very difficult to separate the plowman and his manner of plowing, his team, and the appearance of the plow itself from the actual work done, which alone is the real criterion, when compared with the power required. As to a dynamometer test—that is, to get accurately at the power required—each plow should be driven at different depths, accurately gauged at different widths of furrows, with different attachments—that is, with coulters, coulter-shares, jointers, and revolving coulters; and all the plows should be held by one man, and drawn by the same team, and that a much more powerful one than is necessary, and one to which the plowman is accustomed. I think that excellent, satisfactory, and very useful results might be thus attained.

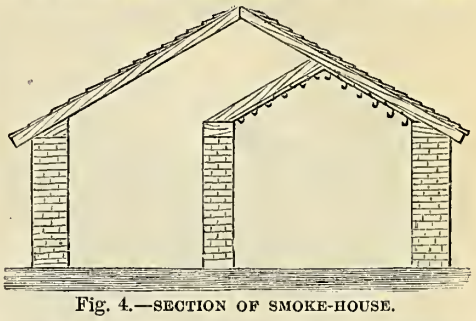


Fig. 4.—SECTION OF SMOKE-HOUSE.

Smoke-house, Ash-pit, and Boiler-house.

Some Litchfield County farmer folks are planning a building to serve as a smoke-house, ash-pit, and boiler-house, and consulted me. I send you a sketch of the plan proposed. They have a grove of maples, the remains of an ancient sugar-bush, and this furnishes them all the sugar they need throughout the year. I therefore introduced a Cook's Evaporator, which is for boiling far superior to a kettle or cauldron; though the kettle is necessary for heating water, and for boiling pig-feed.

The walls of the building will be of stone, not less than 14 inches thick, laid in cement mortar; the inner walls a foot thick. The ash-pit is planned to occupy nearly the whole of the 6 by 6 smoke-house; room being left at the door to enter and set the fire, which is placed under a stone slab laid in the wall, as in fig. 5, 14 to 16 inches above the ground, with an opening at the back in the rounded corner. This inner wall is three feet high, with good top stones, so that it may be used to stand upon to hang the bacon. Figure 4 shows how the roof should be framed, so that the smoke-house may be ceiled with tongued and grooved boards, ventilation being provided at the chimney, and in the door besides, if necessary. The door should be close-fitted and strong. The ash-pit should have an opening for taking out the ashes, made to fit a good-sized flagging-stone, by which it is to be closed on the outside. This hole should be made perfectly tight by plastering around the stone door with clay and wet ashes. The kettle is set in brick, the fire-place opening towards the side door. The plan includes a Cook's Evaporator for sap or sorghum juice. When this is used, the fire is made under the end of the evaporator pan, *F*, set in brick, the flue passing under the kettle, *K*. This flue must be closed by an iron slide when not in use, and the door of the kettle furnace must be closed up and plastered up with clay, if necessary, when the evaporator is used. The sap, first put into the well-cleaned kettle, would have the chill taken off from it at least, and perhaps get quite hot before

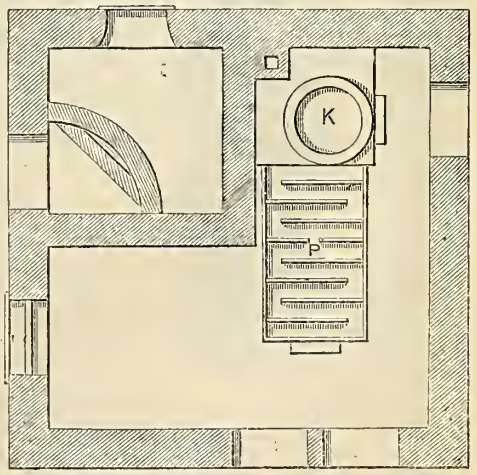


Fig. 5.—PLAN OF BOILER- AND SMOKE-HOUSE

it is placed in the evaporator, where the process of evaporation and skimming would take place.

Picking Fruit.

I was in one of the principal seed stores in New York a few days ago, when a buyer came in to inquire about fruit pickers and baskets. He wanted, particularly, baskets to take into the trees to pick apples. I asked if he did not pick into bags, and found neither he nor the seedsman had ever heard of such a thing. I think it would be quite worth while for you to illustrate the method of picking by a cut similar to the one in Thomas's "Fruit Culturist."—[We reproduce in figure 6 the cut referred to by the writer —EDS.]—We tie a small apple into one corner of a grain bag, selecting a rather large-mouthed bag; then tie this corner to one edge of its mouth, by means of the bag string, taking in so much of the bag that the cord will not cut the shoulder when one's head is put through, and the bag hung from one shoulder, mouth in front. With this, the picker has both hands free, and can climb about in the tree as much as he pleases. When he has picked half a bushel or so, he will begin to find the load burdensome. He empties the bag into the barrel without bruising the fruit by lowering the bag into the barrel, and then gently drawing up on one side, letting the apples roll out, as shown in figure 7.

Fig. 6.—PICKING WITH A BAG.

How Rid the Ground of Wild Mustard.—The Wild Mustard, Charlock, *Brassica* (formerly *Sinapis*) *arvensis*, is one of the weeds imported from Europe, and is troublesome in the grain fields of some parts of this country. The seeds retain their vitality for so long a time, and are produced in such abundance, that when once in the ground it is a hard matter to eradicate this pest. As the Mustard plant is an annual, and must come from the seed each year, it is evident that if the plants are not allowed to go to seed, the eradication must be effected in time. The cereals are the crops that offer the best opportunity for the development of the Mustard, and when the ground is badly infested, to pull out the plants is a great deal of work. In such case, it would be best to grow some crop that will allow the ground to be frequently cultivated. Instead of sowing barley, plant the ground to corn, even if it was in corn the year before, and thoroughly till the ground in the season as late as possible. This will allow the Mustard seed to germinate, but not give the plants time to produce seed. After the corn is harvested, the ground should be plowed again, and left until spring, when a crop of roots, beans, or potatoes should be put in. The beans and early potatoes will be off in time for winter wheat, and the ground is then seeded down to grass. With this method of thorough culture for two or three years, the weed can be thoroughly removed from the ground. Seed-grain brought from some other locality, should be examined for Mustard or any other foul seed.

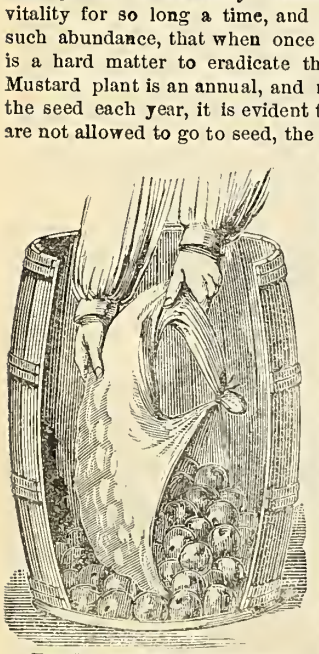


Fig. 7.—EMPTYING THE BAG.

Dome-shaped, Concrete Spring-house.

We were so much struck with the practical character of a novel plan for a spring milk-house, which a friend proposes to erect, that we requested him to furnish the sketches of the same here given.

Figure 1 is a view of the building. The inside diameter is 10 feet. It is 8 feet high. The walls

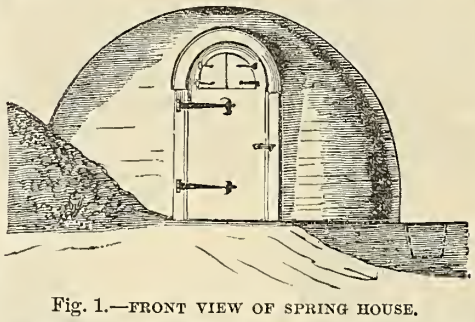


Fig. 1.—FRONT VIEW OF SPRING HOUSE.

are 18 inches thick at the base, and a foot at the top, and to be made of concrete; that is, cement-mortar — one-third cement, two-thirds sand—in which as many stone chips from a quarry are placed as can be completely bedded in, *submerged*, so to speak, in the mortar. This should be handled when fresh-mixed, and as liquid as possible, and and yet set solid. There will be a complete dome, built of hemlock boards; the concrete will be laid upon that, and it is proposed to have it quite rough on the outside, so that vines will cling to and cover it. The door will be a very strong and tight one, horizontally and diagonally boarded, of matched pine, fastened throughout with clinch-nails. Ventilating doors, opening outwards, are shown in the front, and this opening will be protected on the inside with wire cloth. The building is lighted by a circular plate of rough glass, such as is used in floors under sky-lights, fully half an inch thick, and two feet in diameter. Possibly a less diameter will answer for this purpose.

Figure 2 is the ground plan. In this, *B* is the door, entering at which we come upon the cement

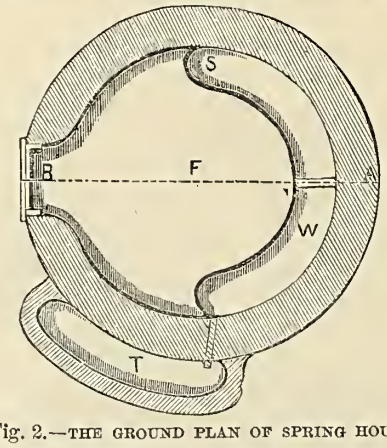


Fig. 2.—THE GROUND PLAN OF SPRING HOUSE.

floor, *F*, which is half surrounded by the pool against the wall opposite the door, which opens towards the north. The pool is designated by *W* in the plan, figure 2. The spring is supposed to rise through its pebbly bed at *S*, and there is a partition at *A*, over which the water flows, and which consequently separates the pool into fresh water, and that less directly from the fountain head, with probably a difference of one degree in the temperature. The temperature of the spring is about 50° in winter, rising several degrees in the hottest weather, in its present unprotected condition. It is hoped that when the spring-house is built, a temperature of 52°, at the highest, will be secured. The pool will have a raised rim six inches wide, and three or four inches high, to prevent water splashing out upon the floor, at about the level of which the water is intended to stand. In this pool the milk will be placed in "coolers" in the coldest part. Jars and stone pots of butter may be placed in the pool nearer the outlet. The temperature of the room will probably not fall below 45° in winter, nor rise above 60° in summer. During the summer, therefore, the cream will ripen for churning in the spring house, but in cold weather it will have to be brought to the house before churning.

Figure 3 is a section on the line *A*... *B*, which is through the doorway. This shows the depth of the pool; the foundations, also laid in cement, so as to exclude surface water entirely; the window in the top, the form of the entrance, etc. The outflow of water takes place at the part of the pool farthest from the spring. At this place, outside of the building, a cement trough is planned, so that animals may drink, and where the rinsing and washing of some of the utensils may be done. A channel will surround the floor, for conducting away any water that may be spilled upon it. The ventilation in the door, coming, as it does, very near to the highest part of the dome, which is 7 feet high inside, is supposed to be abundant. The light may be too great on sunny days, in which case a screen on the outside will keep out both light and heat. Light is, however, no disadvantage in a dairy if unaccompanied by heat and flies. As to warmth—in case it should seem best to use such a spring-house in winter to work the butter in, it would be necessary to heat it. This could easily be done by using a

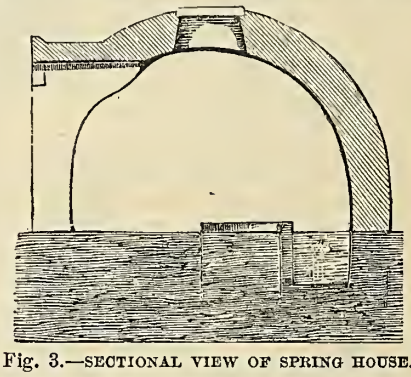


Fig. 3.—SECTIONAL VIEW OF SPRING HOUSE.

charcoal stove from which no odor would come. The pipe should lead directly up and out through a 2½-inch hole. A 2-inch pipe would undoubtedly draw well, and take off all the gases of combustion, which, from their being odorless, are dangerous if not carried away. Sufficient warmth to make the room comfortable would not affect the temperature of the pool perceptibly, unless very long continued. Should the size strike any one as needlessly large and expensive, it may be reduced, say, eight feet inside diameter and six feet high, or six in diameter, and of proportionate hight — the pool being in this case a good deal contracted in size, and the floor lowered to secure head-room.

Milking Three Times a Day.—This matter has been discussed in our columns in former years, though but little has been said on the subject of late. The following, from one of the Cow Essays which will appear in the book, comprising the Prize Essays and others, gives the views of "Spencer" on the propriety of milking three times a day:—"During the heat of summer, the cow should be milked three times a day, at regular intervals—about five o'clock in the morning, one in the afternoon, and nine in the evening. The quantity of milk and butter is considerably increased, and the quality improved, by this practice. The milk is injured by remaining in the udder through the heat of the day, and the cow is made uncomfortable, which, of necessity, diminishes her usefulness. When cows are milked but twice a day in hot weather, the udder becomes too much heated and feverish, and the milk is in a similar condition—the cream seems to be melted, the milk soon becomes sour, the cream does not rise well, and the butter is soft and oily. These difficulties, almost

universally attending butter-making at this time of the year, are mostly overcome by the practice of milking three times a day, and the cow being near at hand it is a small matter to adopt this practice."

A Mud and Muck Digger.

Mr. H. H. Hooper, Bedeque, Prince Edwards Island, sends sketches of an apparatus for digging that is now used quite extensively by himself and others in getting out the mussel mud largely employed in that region as a fertilizer. As it is not patented, and may be advantageously used in many cases in getting out muck, we give it for the benefit of those who have use for such an affair, whether to restore to the land some portion of the fertilizing material that is always running into the sea, or would make use of the fertilizing elements contained in the slowly decaying vegetable matter of bogs and swamp holes. The lower portion of the long handle (fig. 1) has strong iron

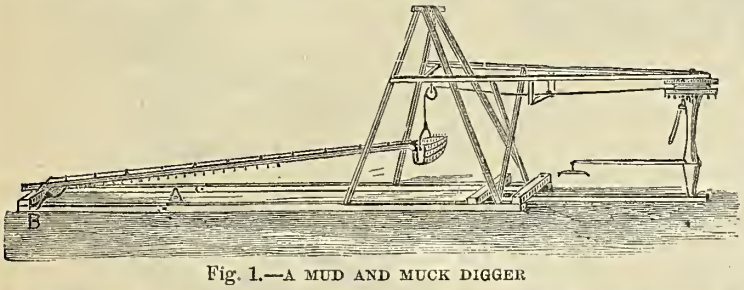


Fig. 1.—A MUD AND MUCK DIGGER

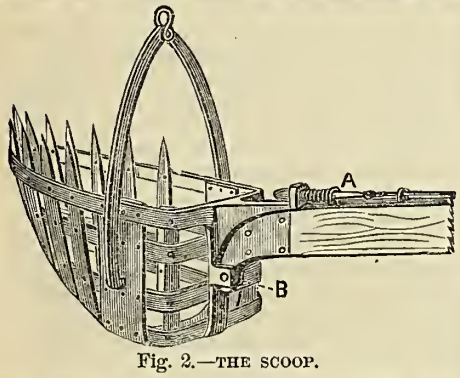
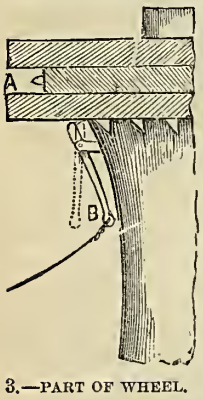


Fig. 2.—THE SCOOP.

bolts placed every six inches apart, which come against an iron dog in the frame at *B*, and serve to hold the scoop in place while being filled. If the mud or muck is hard, the end of the frame may rise up, it being provided with a hinge at *A*. The scoop is worked by a horse attached to a capstan. The whole machine as arranged for work is shown in figure 1. The scoop is made as shown in a larger view in figure 2; and is provided with a sliding bolt, *A*, which, when pulled out, allows the scoop to fall and empty itself. A portion of the upper part of the capstan to which the horse is attached is shown in figure 3. The wheel, *A*, which carries the chain, cable, or rope, as the case may be, is set loose by means of a small lever, with a cord attached, *B*, which comes against broad bolts and holds it when the scoop is being raised.



3.—PART OF WHEEL.

The Collecting and Uses of Rock-Weed.

The Rock-Weed, or Blister-Weed, as it is sometimes called, (*Fucus vesiculosus*), is one of the most valuable of marine plants, and in general use, as a fertilizer, in all the shore towns, where a rocky coast favors its growth. It takes its popular name from its habit of growth upon rocks that line the shore. It clings fast to the boulders wherever there is room, and the foliage (as its fronds may be regarded), hanging in loose tresses, about eighteen inches long, completely covers the rocks. The plant is left more or less bare at half tide, on the ebb, and from that time to half tide on the flood, can be readily gathered by the hands. It is thrown into large baskets and piled on the shore, or carried directly to the cart and drawn to the fields where it is to be used. Farmers more remote from the shore, and persons who make a business of selling sea wrack, transport it mostly in boats and large scows, which are pushed in among the rocks, and loaded, so as to be got off at high tide. The law of the sea makes all wrack, below high water mark, common property that may be removed at any time by water; it cannot be carted off over the land, without the consent of the owner. This gathering directly from the rocks during the summer, furnishes an article of the highest value as a fertilizer. Later in the season, during fall and winter, it is torn from the rocks by the storms and driven ashore, mixed with eel grass and other marine plants. This is much more easily gathered but is not near as valuable. The clear Rock-Weed, where farmers are acquainted with it, has a standard value and sells as readily as stable manure. Many laborers who do not have steady employment improve their leisure in gathering it, and the piles upon the wharves and shore never fail of purchasers, at remunerative rates. It is put to quite a variety of uses and is most prized by those who are best acquainted with it. It is not a concentrated manure, but is thought to be more valuable than the common yard manure. It is excellent for top-dressing pastures or meadows, and the effects are seen for several years, in the larger growth of grass, and in the improvement of its quality. It is a favorite fertilizer for ruta-bagas and the rock turnip. Trenches are opened, filled with the weed, and covered with four or five inches of soil. This never fails to bring a good crop—with fair cultivation. It is also highly prized for cabbages and potatoes, spread broadcast and plowed in, or put in the hill. One of the best pieces of corn in town is upon a sod manured with Rock-Weed, spread broadcast and turned under last spring. It is an admirable thing in a compost heap made of muck, headlands, and any other refuse material, and throws the whole mass into fermentation as readily as stable manure. We have used it a good deal in the sty, and there it operates as an absorbent and subdues immediately all unpleasant odors. Valuable as this weed is, but a small portion of it is gathered. It sells readily as it is discharged upon the wharves, at from one to two dollars a ton, and at these prices is a very cheap fertilizer for all farmers along the coast. CONNECTICUT.

A Plan for a Small Barn.

There are many small farmers, villagers, gardeners, etc., who wish only barn room enough for a single horse and carriage and a cow. To such, the requirements are cheapness and durability, combined with convenience; and with these points in view we give the following plan of a small barn, designed by Prof. G. T. Fairchild, of the Michigan Agricultural College. Three barns have been built on the College grounds, after this plan, and are used by the professors, who speak in high terms of their adaptability to the wants of those wishing a small horse and carriage barn. A view of the barn from the front is shown in figure 1, and while plain in its construction, is pleasing in outline. The first floor (fig. 2) is 20 by 28 feet, and 8 feet between joints. A large sliding door, *a*, 9 feet wide, admits the carriage with the horse attached, which, when unhitched, is led through the sliding door, *b*, into the stable. The small stable door, *c*, opens by hinges inwards, while the back door, opening to the manure yard, moves upon rollers. Two small windows, *e*, *e*, give sufficient light to the stable. The hay-rack and feed-box for the stalls are shown at *f*, *f*, *f*, each having a hay-shoot leading from the floor above. The grain-bins are neatly arranged under the stairway, these being three in number, ranging in contents from 50 to 10 bushels. The second story, or hay loft (fig. 3), is 6 feet from floor to plates, and gives ample room for the storage of hay and straw. The stairway is in one corner, *a*, and out of the way; *b*, the door for the entrance of the hay and straw; *c*, *c*, *c*, ends of the hay-shoots;

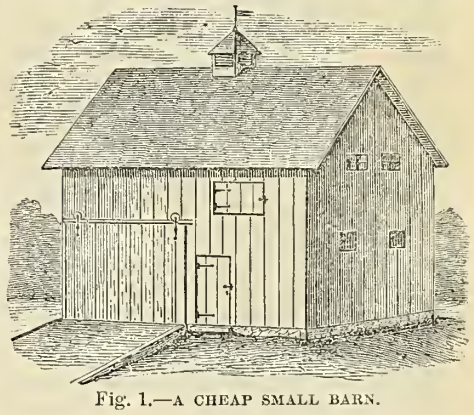


Fig. 1.—A CHEAP SMALL BARN.

d, ventilator; *e*, *e*, windows. The ventilator serves the purpose of a shoot for throwing down the straw used for bedding, and has a number of openings for this purpose at various hights, including one at the bottom for cleaning out the dust, chaff, etc., that is constantly accumulating from the loft.

The cost of the barn thus described will vary according to the locality and the price of lumber, etc. The estimates for the Michigan barns were $300, above the foundation, with two coats of paint;

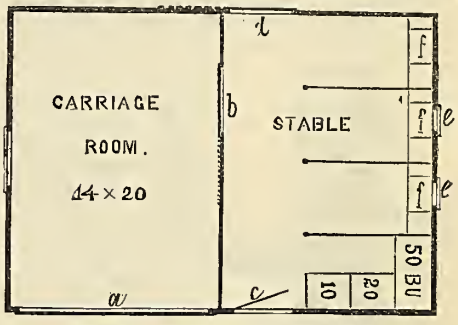


Fig. 2.—GROUND PLAN OF BARN.

but in most states the lumber would cost more than in Michigan, and the estimate for this small barn would be correspondingly increased.

Sheep for Fertilization.—Where sheep are kept for the double purpose of direct income in wool, mutton, etc., and the manure they make, it is important that the extra food, or that outside of what the pasture furnishes, should be chosen with care. It would be wise for the American farmer to become better acquainted with cotton-seed cake, linseed oil-cake, and like concentrated foods. By feeding, and feeding liberally, of such foods, the sheep not only grow rapidly, but the manure they make is rich in nitrogenous matters and valuable fertilizing salts. The growth of animals is a means

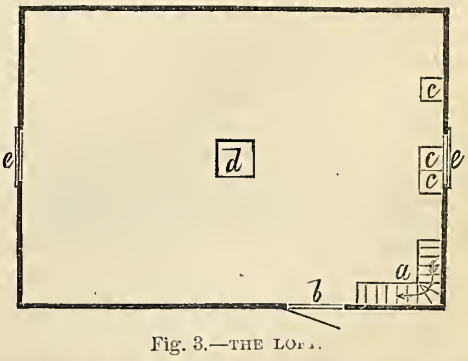


Fig. 3.—THE LOFT.

to an end, and when the most money is made from the flock, and the land enriched, the most rapidly the end is gained. The profit of sheep as fertilizers depends largely upon the kind of food that is used.

Silt-Basins—A Secondary Use.

A Silt-Basin is a small cistern made in the course of a drain for the purpose of arresting the flow of the water, in order that the fine particles of sand, etc., may be deposited in the bottom of the basin, and thus prevent the clogging of the drain. This is the primary use of Silt-Basins, and for this purpose they are, or should be, placed at those points where a given fall changes to a less rapid one, and the flow is not sufficiently great to carry the fine particles of soil (silt) on to the end of the drain. The materials used for, and the modes of construction of, Silt-Basins are various. In cases where a number of drains enter the *main* at the same place, the Silt-Basin should be at that point, and may be made of brick, as shown in fig. 1. It will be seen that the inflowing pipes are placed some distance above the outflowing one, thus arresting the flow of the water in a pool of some depth, during which stoppage the silt is deposited at the bottom of the basin, as shown by the dark mass below the water in fig. 1. A large flat stone or heavy plank is used to cover the basin; by removing this, the working of the drains may be examined, and the silt removed. A small Silt-Basin for a single drain may be constructed of a drain tile six inches or more in diameter, according to the capacity of the drain. Such a Silt-Basin is shown in fig. 2, the top running to the surface, and is covered with a flat stone, etc.

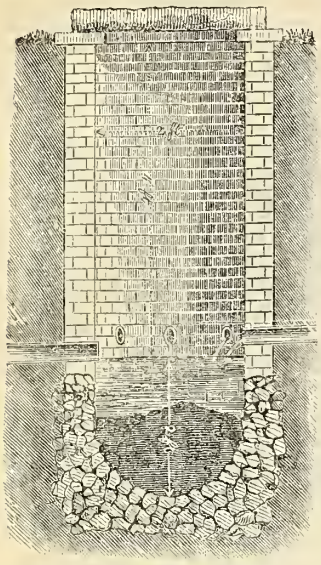


Fig. 1.—LARGE SILT-BASIN.

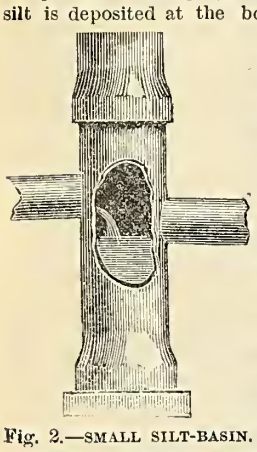
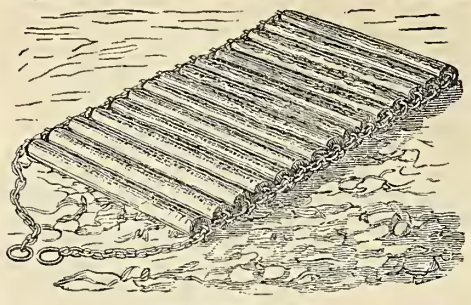


Fig. 2.—SMALL SILT-BASIN.

A second use of the Silt-Basin is that of ventilation, as recently brought to notice by Mr. J. J. Mechi, who says:—"When drains are recently made, we seldom have complaints of their not acting, and this because air has free access to follow the water; for drains are like taps in a cask, they cannot discharge unless air is admitted at the vent-hole, for the water will not flow; so it is in stiff or dense soils which, when consolidated by time and pressure, pass both air and water very slowly." Mr. Mechi gives an instance, where he changed the outlets of some of his drains, and the ventilation of them was much diminished by the operation. "The drains became gradually less active, and we ascertained that it arose from the air not passing into the mouths of the drains so freely as it used to do." For purposes of thorough ventilation of the drains, nothing could answer so well as properly constructed Silt-Basins, where the mouth of the inflowing pipe is placed above the outflowing one, thus giving a free access of air to the throat of the drain. With this double use of the Silt-Basins—namely, the keeping of the drain free from silt, and providing an abundance of air for the free flow of the water—they should be important features in a perfect system of farm drainage.

A Clod Crusher.—A very cheap clod crusher can be made by fastening a number of poles together as follows: The poles are all cut of the same length, and placed side by side—about a dozen of them. A chain is fastened the whole length of each end of the series of logs by means of staples, which are driven through the links and into the ends of the poles. The two side chains are then brought together beyond the poles and fastened to the whiffle-tree of the horse, or the double-tree of the team, that is to draw the crusher. Being flexible, the crusher conforms to the unevenness of the surface. This quickly-made implement may be used for smoothing the surface, or for spreading fine manure evenly over the ground.



A LOG CLOD CRUSHER.

A Spring Gate-Latch.

"W. A." Springfield, Mo., sends sketches of a handy, home-made gate-latch. Mr. A. had a lot of old springs from a worn out lounge, and, wishing to put them to some good use, hit upon the following device for a gate fastening. A sliding bar of hard-wood was made, as shown in figure 1, one end being shaved round, and of two sizes. A wire spring was then coiled closely around this cylinder portion, the ends of the wires being bent to fit within the coil. The latch-piece and the piece with a small round hole, to receive the opposite end of the sliding bar (two forms), are shown separate in figure 1. The whole latch complete, and in position on a gate, is shown in figure 2.

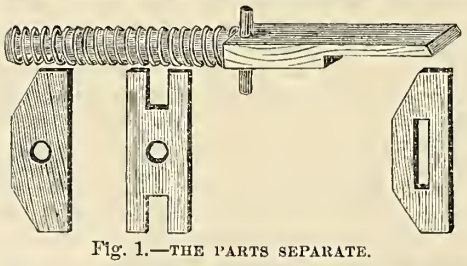


Fig. 1.—THE PARTS SEPARATE.

There are no definite measurements for a latch of this kind. The one described is made of 2½ inch stuff, 1½ inch thick. Mr. A says: "I have had some of these latches in use for over two years, and would not exchange them for any contrivance I ever saw for the purpose. I have them on all the gates on the place, and on one stable door. They are easy to open on horseback, and when the gate comes to, it is fastened when shut. Nearly every day, some one stops to examine the one on the front gate, to see how nicely the spring-latch works."

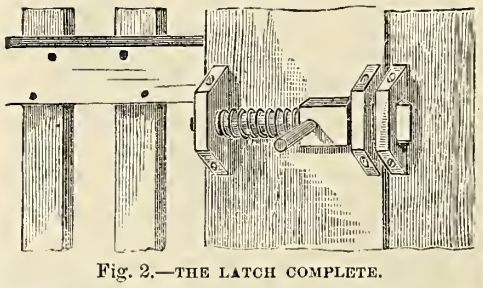
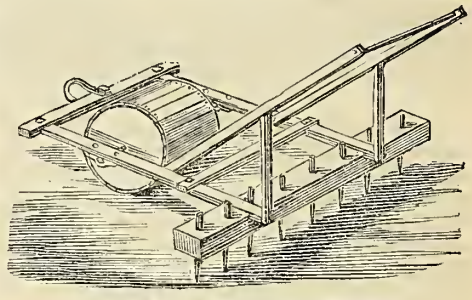


Fig. 2.—THE LATCH COMPLETE.

A Wheat Cultivator.

"W. A.," Springfield, Mo., gives an account of his success in cultivating wheat, and sends a sketch of the cultivator which he made for the purpose. The accompanying engraving very clearly shows the construction of the implement. The head-piece through which the teeth (ordinary harrow teeth) pass, is of hard-wood, 2 by 4-inch stuff, and 5 feet in length. The shafts are fastened to the top of the head-piece by carriage bolts and extend forward with two cross-pieces, one to unite the ends and furnish an attachment for the clevis, and the other midway to give the necessary strength. A roller, made cheaply of boards, is placed just in front of the middle cross-piece, and is 18 inches in diameter. The handles are fastened to the sides of the shafts, and run upward and backward, as shown in the engraving. The practice of cultivating wheat is growing rapidly in favor, the chief obstacle to its general adoption being the lack in the market of a proper cultivator. This needed implement will come as the demand increases.

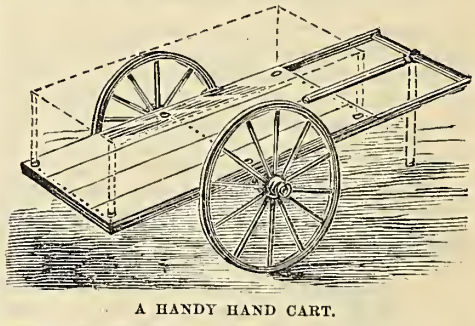
The cultivation of the wheat should begin so soon as the rows are visible, and the operation repeated at least twice before the ground is frozen. One cultivation in the spring will usually be sufficient The advantages of wheat cultivation are: the saving of at least one-half of the seed, as the rows must be further apart; keeping the ground clear of weeds; a greater yield; and last, but not the least, as experience teaches, less liability to the attacks of the Hessian fly, and therefore a surer crop. Further, each plant has space to tiller and spread over the ground, so that there is much less danger from smothering by deep snows than when thickly sown.



A HOME-MADE WHEAT CULTIVATOR.

A Hand Cart for the Farm.

There are many occasions on the farm when a wheelbarrow will not answer the purpose, and a hand cart is just the thing to save hitching up the team. A large cart with good sized wheels is a handy implement. The one we have used for a long time was made from the hind wheels of an old road wagon. A new axle was made and the irons fitted as carefully to it as if it were a wagon. The tires were re-set and the "running gear" was therefore about as good as new. A "body" was made out of sound two-inch oak stuff, thoroughly bolted together, and upon it the bottom boards were nailed as shown in the engraving.



A HANDY HAND CART.

It was found convenient for many things to have a box, and one was made of pine boards, which fastened (by means of projecting corner and side cleats) into six holes bored in the frame. A rest-stake—an old broom handle cut down—was attached to the front bar by means of a leather loop, so that it could be thrown over on to the bottom of the cart when not needed to hold the handle from the ground, as shown in the engraving.

We do not know how much, or rather how little, this handy hand cart cost, but it is certain that it would be missed from the farm if it should be taken away for a single week. It is just the thing for carting small quantities of green fodder, grain, etc., for a short distance. As it is a gentle grade

from the barn down the lane, the cart is frequently used for taking tools, seed grain, etc., to the fields as they are wanted, thus saving the team from leaving their work and a loss of time.

An Ice-House with a Cool Room.

The requests to give a plan for an Ice House which shall contain a cool room, are numerous. Some ask for a room in the house which may he

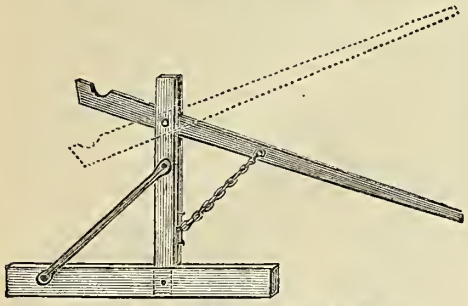


Fig. 1.—ANOTHER WAGON JACK.

used as a dairy, while others wish an apartment in which meat and other provisions, fruit, etc., may be stored. A plan of an Ice-House with such a room was given in January, 1879, which is as simple as anything of the kind. Those who have had the most experience in such matters do not approve of the plan of combining an Ice House and Refrigerator in one. Aside from the fact that it is often desirable to place the ice house at too great a distance from the dwelling for the convenient use of a refrigerator, the two things—Ice-House and Refrigerator—being for opposite uses—cannot well be combined. In an ice-house everything is arranged for the most perfect preservation of the ice. The value of a refrigerator depends upon the melting of ice, and the best refrigerator is that which allows the ice to melt, and to take its heat from those objects which we wish to cool. To make a cool room in the ice house tends greatly to the waste of the ice. We cool a much larger space than there is any need of, and this cooling is constantly going on, with consequent melting of ice, whether the cool room be full or empty. Those who have had the most experience in this matter, are well persuaded that for the greatest economy in ice, it is far better to have the arrangements for storing and for using the ice separate and distinct, and we think they are right. Let the ice-house be made with the sole view of keeping the ice in the most complete manner, and take from it ice as wanted, to be used in the refrigerator. The size and style of the refrigerator will depend upon the uses to which it is put, and may be a small box or a good-sized room; in either case to be so contrived that there will be little or no melting of the ice from outside heat, but only through abstracting it from the articles placed within to be cooled.

Fig. 2.

Hints and Helps For Farmers.

A WAGON LIFTER OR JACK.—"T. G.," Union Co., Ill., has recently made a wagon lifter, and it

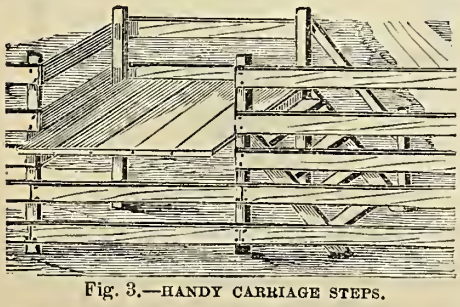


Fig. 3.—HANDY CARRIAGE STEPS.

has proved to be the best one he ever saw. He writes: "Some patented Jacks are practically useless from one defect, namely, they allow the wagon to start either forward or back, but mine holds it still without a block at each wheel. It is not patented, and all are welcome to the use of it. Figure 1 is the implement complete; the foot piece is 2 by 4 inches, 24 inches long, placed on its edge. The standard, figure 2, is also 2 by 4 inches, and 27 inches long, with a slot in the top 2 by 8 inches to receive the lever. The slot has several holes passing through to adjust the lever to different hights of axle by changing the bolt. The standard is "halved on" to the foot piece and bolted fast. A ¾-inch iron brace, with a bolt at each end, secures it in an upright position. The lever is 2 by 3 inches, 5 feet long, with a tapering handle, and is bolted 1 foot from the large end. When pressed down it is held by a chain 2 feet long, with a link slipped over one of the 3 headless bolts, as seen in figure 2.

CARRIAGE STEPS.—Whoever lives in the country and regards the comfort of his household will provide some easy means of getting in and out of the family vehicle. There are many kinds of carriage steps or "horse blocks," as they are sometimes called, the character of which will depend somewhat upon the surroundings. If there is a board fence near by, as is often the case, between the carriage barn and the house, or the house and the street, then steps may be constructed on it after the manner shown in the engraving, figure 3. The exact size will be governed by circumstances, but it should be large enough to be easy to alight from. Its hight should be equal to that of the floor of the carriage. Such carriage steps are especially a comfort to lame or aged people, to whom the getting in and out of the vehicle, without some such aid as these steps is the hardest part of the journey.

BAG HOLDERS.—At this season of the year, the grain bags are being filled all over the country,

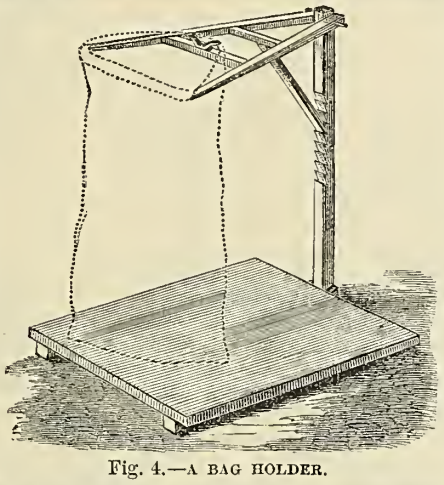


Fig. 4.—A BAG HOLDER.

and some means of holding them is often thought of, even if the thought does not develop into a design, and the design into a labor-saving implement. Nearly every boy has found the holding of a grain bag to be not only monotonous, but exceedingly tiresome to young arms, and has felt that some sort of a bag holder would be a great relief. There are now a number of patent bag holders in the market, but it is not necessary to go to the expense of one of them, provided a person has carpenters' tools, and a little skill in using them. From time to time, we have given a number of illustrations of these home-make bag holders. Perhaps there is none easier made, and more handy, than the one given in October, 1874, which we reproduce here for the benefit of inquiring grain growers. This holder consists of a broad and heavy bottom board, to give it stability, with an upright piece attached at one side. A pair of diverging arms are fastened to the top of the upright, and are held out horizontally, by a brace which passes from a cross piece between the arms, to notches in the upright. The bag is held in place by having its upper edge slipped over a button, on the second cross-piece, and also turned over the projecting ends of the arms. The dotted line, in the engraving, shows the position of the bag, and how the edge is turned over the button in the rear, and the ends of the horizontal arms in front.

A LOG RAISER.—"F. McL," Westmorland Co., Pa., sends a sketch of his Log Raiser, fig. 5, which he describes as follows: Lay a good, stout rail, one end on the log to be raised, letting it extend out at right angles with the log; pass the chain under the log, and hook if around the rail, set the "jack" on the opposite side, and hook the chain to the lever,

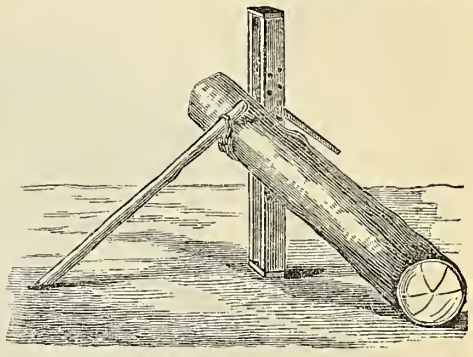


Fig. 5.—A LOG RAISER.

as near the ground as convenient. The lever works on two stout pins, the pins being alternately moved up a hole at a time. The method of working the log lifter is evident from the engraving which is given in figure 5.

A CHEAP LEVEL.—The accompanying engraving shows how easily a serviceable Level may be constructed with an ordinary carpenter's square, a short plumb-line, and a sharpened stake. The stake, with a split in the top, is driven into the ground, and the square adjusted as shown in the engraving. For the plumb-line, a string and a piece of lead, or, in an emergency, even a stone, for the plummet, will answer. The line is fastened to the shorter arm of the square, so that it will run close to and parallel with the inner edge of the longer arm. As the two arms of the square are at right angles, when the longer one is perpendicular, as determined by the plumb-line, the shorter one is horizontal or level. Any objects sighted from *a*, along the upper edge to *b*, will be in the same plane, or on the same level. See figure 6.

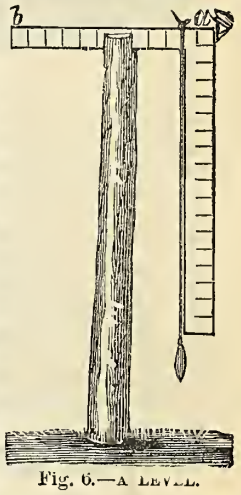


Fig. 6.—A LEVEL.

A BARN BROOM.—An ordinary house-broom is far too weak for the coarser and harder sweeping of the barn, and, in order to keep the barn floor tidy, a heavy broom is needed. Birch twigs, fastened between strips of boards that are bound together by wire, or, better, by small bolts, will make a broom that will serve a good purpose in the barn. But it is not convenient for all to make their own brooms, and for those who must buy, the

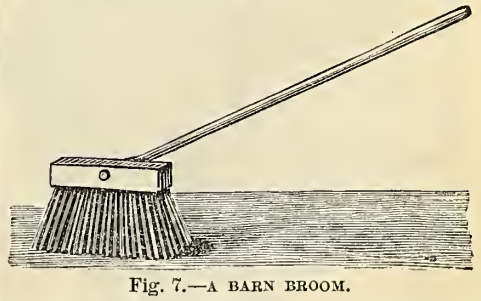


Fig. 7.—A BARN BROOM.

trade supplies a very excellent and durable barn-broom or barn-brush made of strips of rattan, secured in a stout head, to which a long handle is attached at the proper angle. Such a brush is shown in fig. 7; and, when once in use, will be found a most convenient and a durable implement with which to keep the barn floor in good order.

A Convenient Cottage, Costing $1,000.

BY S. B. REED, ARCHITECT.

These designs were prepared to meet the increasing demand for inexpensive and comfortable country houses. The question is frequently asked: "Can a dwelling be constructed for the sum of $1,000 that will contain all the accommodations and conveniences required by an average-sized family, and withal have an appearance that shall not compromise one's idea of self respect?" The chief difficulty in the way of a satisfactory answer lies in the arbitrary number and character of the rooms required. As a rule, there must be the conventional parlor, dining-room, kitchen, entrances, closets, etc., in the first story, and several chambers above; altogether approximating establishments costing double or treble the estimated amount. Although such demands are perplexing, their number is so large that they can not be ignored. Several designs for cottages of this class have been already published in the *American Agriculturist* (see numbers May, 1875; May, 1876; May, 1877, and April, 1878), which may be consulted with profit by those who are considering the subject of building.

The plans here given will be found to excel those referred to in many respects, especially in the amount of accommodation, having *seven* convenient rooms, instead of the usual five, or at most six divisions.... **Exterior** (fig. 1).—The side elevation shows the outside appearance of the house. The body is set at a convenient hight from the ground, the foundation showing 2 feet above the grades. The outlines of the main building are symmetrical and well defined. The roofs are set at an angle of 45°, giving them the prominence they deserve. The gables have a touch of ornamentation, and light chamfer work is put along the frieze, and under the windows, giving a finished appearance. The front and rear Porches are of timber work, also chamfered. In some localities it may be desirable to have more shade in front than is afforded by this porch, in such case a veranda may take its place, crossing the entire front of the house.... **Cellar.**—Hight, 6½ feet. In the estimate of cost appended, allowance is made for a cellar under the wing only, which is sufficient in most cases. Others, especially farmers, wanting all the store-room possible, may extend the cellar under the entire building.—[All the cellar-room should be excavated for the sake of good health, even if the room is not otherwise needed.—ED.]—There are two windows, an outside entrance, and a flight of plain stairs leading to the kitchen above. .... **First Story** (fig. 2).—Hight of ceiling, 9 feet. The front entrance is from the porch to a vestibule, and through it to the two principal rooms. The vestibule has a small window at one side, towards which the front door swings in opening, and at the other side sufficient space is allowed for a hat-rack and stand. The Parlor and Dining-room are of equal dimensions, and similar in form, both being octagonal in front, and having a single chimney between them. The parlor has front and side windows, and one closet. The Dining-room, intended as the family living-room, is conveniently arranged, having an open fire-place, three windows, a closet, and direct communication with the front vestibule and rear entry. The Kitchen opens from the rear entry, is fair sized, and well lighted. It has a large fire-place, a pump and sink, two closets, and a stairway to the cellar. The rear entry opens from a covered porch, and is lighted by a small window, and from it a boxed or cottage flight of stairs lead to the second story. It will be observed that there are no superfluous halls, or other waste room, every inch of space being devoted to purposes of real utility.... **Second Story** (fig. 3).—Hight of ceiling in the main part, 3 to 8 feet; in the wing, 2 to 7 feet. The roofs, being set at an angle of 45°, are unusually steep, giving increased head-room; then the partitions surrounding the hall are set to add to the hight of the vertical walls where most important. There is a hall, four rooms, and four closets on this floor. The two front chambers have two windows each, and the chimney between them allows for the use of stoves, if required. The two rear rooms serve acceptably as bed-rooms, the larger one having two windows, will accommodate two persons comfortably. The smaller room has a sash-door, through which light passes to the hall.... **Construction.**—The foundations and chimneys are of brick-work. Frame of sawed spruce, siding of pine, "novelty pattern." Roofs of pine shingles; floors of tongued and grooved spruce; windows, four lights each; doors, pine, panelled; plastering, three-coat work; painting, two coats. The following estimate covers the cost of building by this plan. Those requiring the increased veranda, and cellar space suggested, should add $50. In many localities, suitable stone and sand abound, which may be had for hauling. In such cases, the foundation may be of stone, which, together with the plastering, will cost much less than here calculated.... **Estimate.**—Cost of materials and labor is as given below:

38 yds. Excavation, at 25c. per yd....	$9 50
11,000 Brick in foundation and chimney, at $12 per M..	132 00
500 yds. Plastering, at 20c. per yd....	100 00
1,800 ft. Timber, at $15 per M....	27 00
3 Sills 4x7 in. 20 ft. long. 1 Ridge 2x7 in. 25 ft. long.	
3 Sills 4x7 in. 18 ft. long. 1 Ridge 2x7 in. 23 ft. long.	
3 Sills 4x7 in. 17 ft. long. 48 Beams 2x6 in. 12 ft. long.	
2 Plates 4x6 in. 25 ft. long. 24 Beams 2x7 in. 16 ft. long.	
2 Plates 4x6 in. 17 ft. long. 2 Valleys 2x7 16 ft. ft. long.	
4 Posts 4x6 in. 13 ft. long.	
300 Wall Strips, at 12c. each	36 00
40 Joist 3x4, at 15c. each....	6 00
130 Siding, 9½ in., at 28c. each....	36 40
Cornice materials....	15 00
300 Shingling Lath, at 6c. each	18 00
48 bunches Shingles, at $1.25 each....	60 00
60 ft. Tin Valleys, at 8c. per ft....	4 80
160 Flooring (inside), 9 in. wide, at 28c. each....	44 80
30 Flooring (outside), 1½ in. wide, at 25c. each....	7 50
2 Cellar Windows, at $3 each....	6 00
15 plain Windows, at $5.50 each....	82 50
1 Dormer Window, at $8; 21 Doors, at $5 each....	113 00
2 Porches, $25; 2 Stairs, $16....	41 00
5 Mantel Shelves, $10; Closet finish, $6....	16 00
Nails, Pump, and Sink, $25; Painting, $75....	100 00
Carting, $15; Carpenters' labor, $125....	140 00
Incidentals....	4 50
Total....	$1,000 00

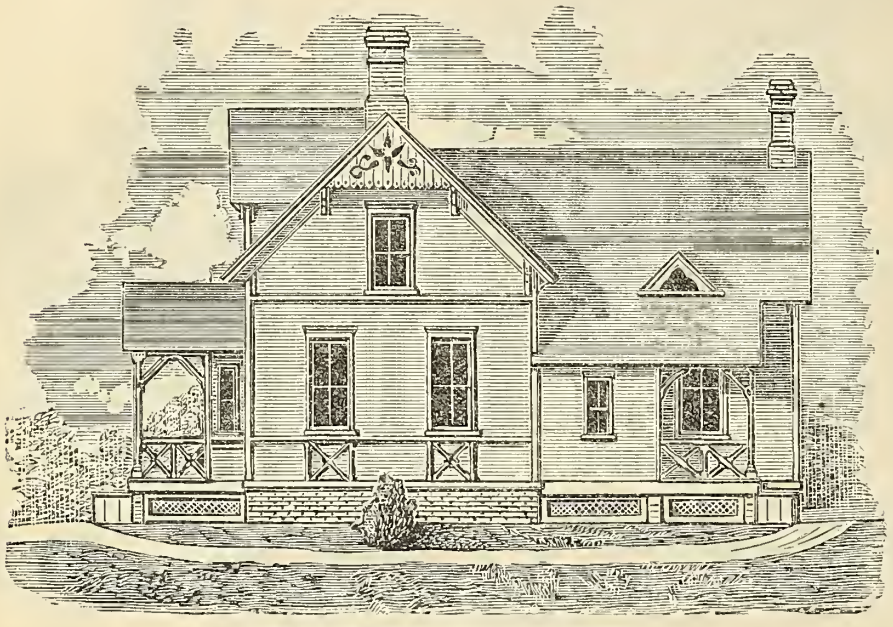


Fig. 1.—SIDE ELEVATION OF THE HOUSE.

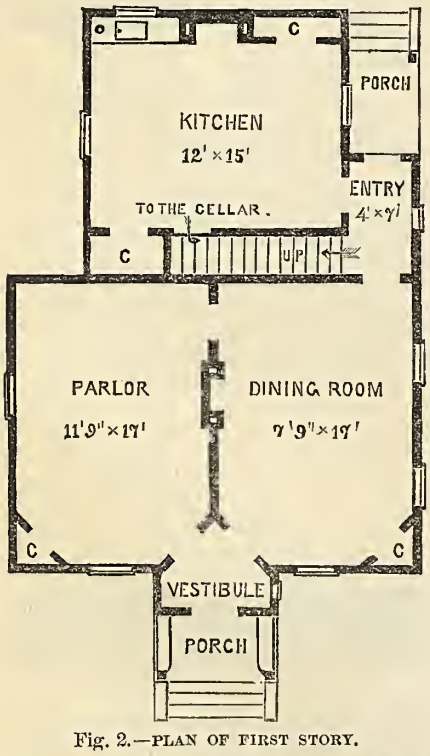


Fig. 2.—PLAN OF FIRST STORY.

Road Dust is frequently the most convenient absorbent at the farmer's command; and a few barrels of it, when properly used, will save a large amount of fertilizing material. It is an excellent thing to have in the poultry-house, where the fowls can dust themselves at pleasure, a large box filled with it being the most acceptable shape. The fineness of the road dust makes it of particular value.

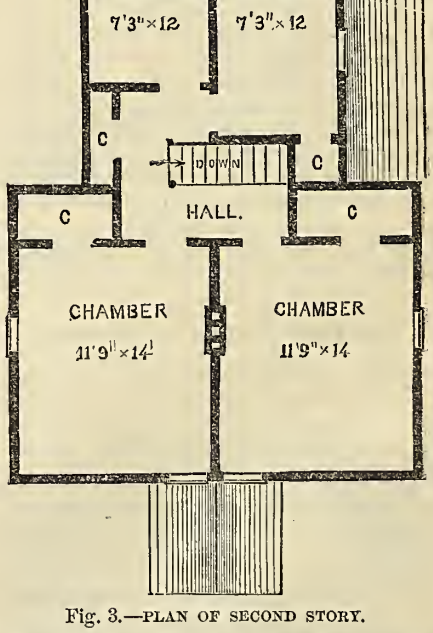


Fig. 3.—PLAN OF SECOND STORY.

That containing the most clay is the best absorbent; in fact, a fine sand is of but little use either as an absorbent or deodorizer. A supply of this road dust should be gathered and stored during the first dry spell, before the season closes. There is no better time than the early autumn for the gathering of a quantity of this valuable material.

Mawah Flowers—A New Cattle Food.

A large tea importing house, Messrs. Billinge & Wetmore, of New York, received from their correspondent in Calcutta a consignment so much out of the usual way that we were consulted as to the disposal of it. The article in question was several tons of Mawha, Mahwa or Mahooa flowers, to be sold as cattle food. The idea of the "effete east" sending food to America, and the idea of feeding cattle, or anything else, upon flowers, are both strange enough to invest the importation with no little interest, and however the matter may result as a commercial enterprise, our readers will no doubt be glad to learn what this article is that is sent a long ocean voyage to feed and fatten our cattle. The Mawah Flowers are produced by *Bassia latifolia*, a tree belonging to the Sapodilla Family or Sapotaceæ of botanists. The trees of this family are found in the tropical parts of both continents, and are noted for affording a variety of useful products. Several tropical fruits are produced by members of this family, others afford oils; the Cow Tree of South America that gives milk, and the tree that yields Gutta Percha, are placed in this family. But we are now interested in one member only, *Bassia latifolia*, which abounds in certain districts in Central India. The tree is described by Roxburgh in his "Plants of the Coast of Coromandel" (1795) as of medium size, with horizontal branches, and smooth leaves 4 to 8 inches long, and half as wide. He figures the flowers as produced in clusters at the ends of the stems, each with a rounded tube, and about 14-parted on the border. The fruit is an inch and a half long, containing one to four seeds, which on expression yield a thick oil used for burning. The wood is very hard and strong, and used by wheelwrights. It is the flowers that have the principal interest for us at present, and pretty much all that is known about these, outside of India, is contained in a communication by Mr. E. Lockwood to the Linnæan Society, and printed in the 17th volume of the Society's Journal. From this article, Prof. Asa Gray has kindly made for us the following abstract of what relates to the flowers. These fall from the trees in great profusion in March and April. Birds and squirrels feed on them among the branches, and the villagers collect those that fall to the ground in immense abundance. Each tree yields two or three hundred weight of corollas, and these form a regular and very nourishing article of food for the poorer classes. As the crop never fails, it is very important in times of famine. Much of the surplus in ordinary seasons is distilled into a strong-smelling spirit. Mr. Lockwood closes his account as follows: "But not only are the Mahwa Flowers good for distilling spirits, they are still more useful for feeding cattle. My father, the rector of Kingham, has been feeding his pigs on the Mahwa which I brought home, and Mahwa pork is beginning to be celebrated in this neighborhood.....The extraordinary keeping qualities of Mahwa form also a further recommendation for its introduction into England. Before leaving India, I had a ton shovelled into sacks, and put on board a vessel in Calcutta. They were gathered in April, 1876, and after having been kept for nearly two years, are as good as when first dried. No weevil, apparently, attacks them as they attack grain."—Another account states that so great is the value of these flowers to the natives, that in the expeditions made by the English against troublesome tribes, that they have only to threaten to cut down the Mawah trees to bring the rebellious people to terms. A sample of the flowers as imported shows a soft, sticky mass, with much the appearance of raisins of a poor quality, such as are packed in casks. When soaked in water, the individual corollas swell out, and assume a flattened, globular shape, about as large as an average cranberry, and are found to consist of a very fleshy cup, within which are a great number of anthers. At our suggestion, Messrs. Billinge & Wetmore had an analysis made of this interesting product, and the report of the chemists, Messrs. Krackowizer & Harnish, shows that the flowers contain the remarkable amount of 63.40 per cent of sugar! The other constituents are given as follows:

MAWAH FLOWERS (*Bassia latifolia*).

Moisture	17.50
Fatty Oil—soluble in Ether	0.13
Sugar	63.40
Insolubles as Fibre, also Vegetable Fibrine and Albumen	7.54
Mineral matter	4.05
Coloring and Soluble Albuminous matters	7.38
	100.00

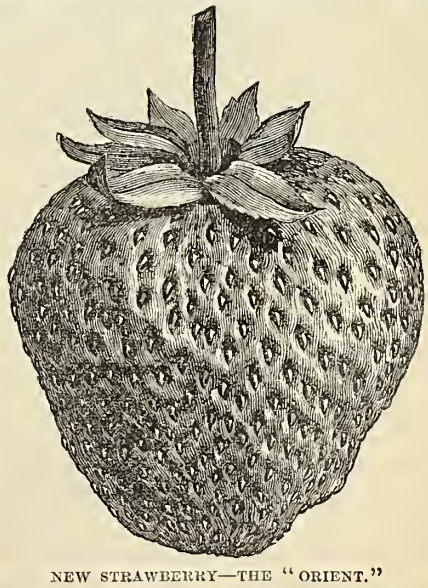
Without reference to other constituents, this enormous percentage of sugar fully accounts for the value attached to the flowers in India as an article of food, and for their use as a source of spirituous liquors. In a scientific point of view, the Mawah is a most interesting product. It is rarely that we find the flower, the corolla of a plant, to serve any more than as a temporary purpose in protecting the reproductive organs within. For it to secrete more than half its weight of sugar, and thus become an article of economic value, and even of commerce, is most remarkable. The future of the Mawah as an article of trade in this country will, of course, depend upon its cost, and the commercial aspect of the article remains to be developed.

Strawberries—New Varieties.

As well expect a spring without a new fashion in bonnets, or, we should say, hats, as a season without new strawberries. There are those who affect to ridicule new varieties, and think that the offering of them is a mere trick of the dealers to make sales. While we think that a variety should not be offered merely because it *is* new, but should have some point of excellence to commend it, we gladly welcome new kinds that present any claim upon our attention. It is only by the production and testing of new varieties that progress is made. If, among all the new ones offered each year, there could be one worthy of a place on the list of the best, it would be making a great advance. It was worth testing 20 varieties to get the Charles Downing, and what if we put aside 19 others, have we not the Sharpless? There is not, and it is not likely that there ever will be one strawberry that everybody, everywhere, will grow to the exclusion of all others. A few years ago it seemed as if the Wilson would be the universal berry, but now we rarely see it. With some Monarch of the West is in high favor. Our friend Roe says "it should have a place in every home garden;" but though the plants come from Roe, and we know them to be true, in our "home garden," they are as far below the surface as a plow could put them, and there they may do some service as a fertilizer, which is all the use the Monarch can be to us. Observe, this is not a word against the Monarch, for it is a splendid variety in other gardens, but is taken to illustrate the fact that no one variety does well everywhere, and that we must have several good ones.

Among the recent novelties are two seedlings reared in 1876, by Oscar Felton, well known in Philadelphia and vicinity as a successful grower of small fruits for market, and also as an experimenter in the production of new varieties. The two seedlings, the "Orient" and "Satin Gloss," were first brought to our notice in 1878. They were exhibited that year at a show held on the Centennial Grounds, where their merits were recognized by the judges. Knowing the practical character of Mr. Felton's horticulture, he being a producer of fruit and not of plants, the fact that he has adopted these two varieties as his chief reliance for market fruit is stronger testimony as to their quality than anything that might be said about them. We give descriptions and engravings of these new varieties in order to place them on record. As already stated, Mr. Felton is a fruit grower, and he has placed the plants of these varieties in the hands of Gibson & Benuet, who furnish the following descriptions:—

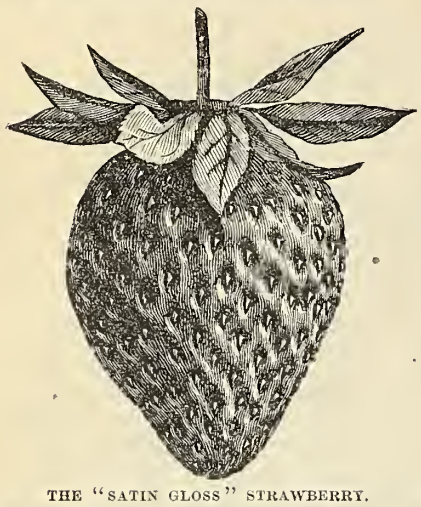
Orient.—A seedling of Monarch of the West, and is larger, firmer, and of better color; it yields



NEW STRAWBERRY—THE "ORIENT."

more fruit, which ripens up all at once, and stands up better than that of its parent, berries of the largest size often measuring 6 and 6¾ inches in circumference; form roundish-conical; size and shape quite uniform, sometimes a little uneven;

calyx medium; color, a fine scarlet lake, with shiny surface; flesh white, moderately firm; quality excellent. Plant vigorous, productive, the fruit running large to the end. Regarded by Messrs. Gibson & Bennet as the largest and finest berry ever tested in their vicinity. The fruit brought Mr. Felton 40 cts. a quart last spring, and, cultivated side by side with the Sharpless, gave a much larger yield.



THE "SATIN GLOSS" STRAWBERRY.

Satin Gloss.—A seedling of the Lady Finger. Fruit medium to large, and in shape somewhat like its parent; calyx very large; color, bright, glossy vermilion, coloring evenly all over; very regular in size and shape; flesh firm, which, with its immense calyx, makes it an excellent shipping berry. Plant exceedingly prolific, continuing long in fruit, and holding its size to the end of the season. Messrs. G. & B. say that this is the most strikingly beautiful fruit of any that they have seen.

Strawberry Culture—Fall Planting.

In setting out strawberry plants in autumn—that is, ordinary layer plants taken up from the bed in which they have taken root—nothing is gained in point of time over spring planting, so far as hastening the crop is concerned. A field or bed set in April or May, 1881, will bear a full crop in June, 1882. If the same plants were set in September or October, 1880, they would give a crop no sooner. We say "crop," as in either case a few berries may be borne, but none can be depended upon. While the crop is gained no sooner by planting six months or more earlier, there is, except in cold localities where autumn is short and winter long, much to be gained otherwise by fall planting. The soil is still warm and mellow, work is not so driving as in spring, and there is not the fear that a drouth may cut off or injure the plants before they become well established. Those engaged in growing strawberries on a large scale plant at both seasons, but the practice of fall planting is gaining favor. The plants set in autumn have a chance, as gardeners say, to "get hold of the soil," their period of probation being past, they start and grow right on as soon as spring opens. Any apprehended danger from winter thaws and freezing is avoided by the mulch, which all of the plants should have for the best results. Those who would have a crop of strawberries next year can do so by setting out "pot-grown plants." These, as has been explained, are plants from runners which, instead of striking their roots in the soil of the bed, have a small pot of rich earth placed under them, in which they take root. These pot-grown plants may be taken up and set out in August or September, without receiving the least check, and will next spring give a fair or full crop, according to the strength of the plants and time of striking and setting. All the dealers in plants now furnish those that are pot-grown, at a price that can barely cover the cost of the extra labor required to produce them. How far apart? is one of the frequent questions. In field culture the rows should be far enough apart to allow the cultivator to run between them, and this will depend somewhat upon the implement used, three feet being usual, with the plants a foot apart in the rows. In garden culture, rows two feet apart and a foot between the plants is most common. Other frequent questions are about manure and fertilizers. Large crops of large berries can only be picked by those who have been liberal to the plants. "No manure, no cabbages," is better understood and acted upon than "no manure, no strawberries." We can give no rules for the amount of manure. One successful grower upon being asked how much he used, replied: "All I can get." If about to set a strawberry patch, we should prepare it as the same soil would require for early cabbages, and then put on a little more manure. Wood ashes do wonders on strawberries in the way of making fine, vigorous plants, and guano, if a moderate dressing is given after the fruit is set, will tell at picking time. There is nothing about strawberry culture that should deter whoever has the land from having the fruit in abundance. There is no reason why every farmer's family should not have strawberries, and of the best, and in abundance—yes, three times a day, and no one afraid to pass the saucer the second time. The notion that strawberries can be set only in the spring, has done more than anything else to prevent their general culture. Every one knows how difficult it is upon the farm to get odd jobs done in the spring. This odd job of the strawberry bed can be better done now, this very month, than at any other time. A few bushels from the abundant crop of wheat may well be set aside to pay for the plants. Let them by all means be bought and set this month!

Currant Culture—"Fay's Prolific."

Of all the small fruits, the currant is the one that the farmer is most likely to cultivate. Like the quince among tree fruits, if put anywhere, and let alone, it is quite sure to produce something, and we oftener see both (the currant and the quince) struggling under neglect than in the enjoyment of proper care and culture. Cultivated as a market fruit, the currant is evidently profitable, as those who have cultivated them for many years quietly add to the extent of their plantations. The experience of our correspondent, "W. C.," given elsewhere, bears directly upon this point. Unlike the strawberry, raspberry, etc., the currant does not demand promptness in picking; a day or two of delay will not ruin the crop, and when sent to market, if not sold the first day, it need not be closed out at a sacrifice, but will appear bright and fresh the next day. In view of these qualities, and the fact that the fruit is always sure of a sale, we wonder that there is so little interest manifested in the currant. New varieties of the strawberry and of the raspberry are brought forward every year, but who has anything to say about a new currant? Those of us who kept the run of fruits thirty or more years ago, can recollect that the Cherry and the Versailles currant were as well recognized as distinct as are the Concord and Delaware grapes. Now our pomologists fail to distinguish the two. We have no doubt that what may now be received from the nurseries as the Cherry and the Versailles are one and the same; but this does not, to our mind, disprove that there were formerly two well-marked varieties known by these names. As the case now stands, the small currants are known as "White" and "Red Dutch;" the large red are called "Cherry," as that is a better market name, though they are what we formerly knew as "Versailles," and the large white is called "White Grape." So far as the market goes, these have been the varieties for many years past. In this state of affairs, we were much pleased to receive from Geo. S. Josselyn, Fredonia, N. Y., specimens of a new variety of currant called "Fay's Prolific," which appeared to have so many desirable qualities that we inquired as to its history. The variety was produced by Mr. Lincoln Fay, of Portland, Chautauqua Co., N. Y., who has experimented with seedling currants during the past thirty years. He has raised thousands of seedlings, but this is the only one that he regards as a marked improvement over the old kinds. The specimens sent us indicated wonderful productiveness, but this is the quality which appeared to us of less importance than did others, as any currant, under high cultivation, will bear an astonishing crop. In giving an engraving of this new variety, we did not select a specimen to show its great bearing qualities, but with a view to give the size and character of the fruit. The individual berries are of the largest size, the bunches are long, and the fruit holds out of good size from the top to the bottom of the cluster. The bunch has a long stem—*i. e.*, there is a long space of naked stem between the uppermost berry and the attachment to the bush. While this may not appear to be of importance, it makes a vast difference in the picking, as it allows the fruit to be handled without crushing the upper berries, and admits of rapid work. As to the qualities which cannot be shown in an engraving, we may say that the color is good and the flavor most excellent. It has not the intense acidity of some kinds, but is rich and full, and the flesh tender throughout. The fruit came by express from Buffalo, in excellent order, and on the fifth day after it was shipped was in good eating condition. Being opposed to double-headed names, we wrote to Mr. Josselyn, who had informed us of his intention of placing the

"FAY'S PROLIFIC" CURRANT.

variety on the market, asking him to drop the "Prolific" and simply call it the "Fay Currant," the name it would in a few years receive. To this Mr. J. returned the sufficient answer that there was already a currant introduced hy, hut not originated by Mr. F. which is locally known as the "Fay," and the addition was necessary to prevent confusion. "Fay's Prolific" appears to possess all the requisites of a first class currant. As to its bearing qualities, Mr. Josselyn thinks that under the same conditious it will produce four to five times as much fruit as the "Cherry." In the specimens sent there might have been more fruit had there been room on the stem to put it. After testing it by the side of other varieties for the past eight years, Mr. Fay has adopted this as a market fruit. In the Buffalo market the variety has already obtained a reputation, and duriug the past seasou sold at 15 cts. per quart, when no other variety brought over 10 cts. Upon looking carefully at this variety, and after showing it to good judges, we think that "Fay's Prolific" marks a good step forward in currant culture. To save Mr. Fay the trouble of correspondence, we may state that the entire stock of plants is in the hands of Mr. Josselyn.

The Small-flowered Lilies.

In describing Kramer's Lily last month, mention was made of the great advance that lily culture has made within the past 20 years. That species, *Lilium Krameri*, represents a class of lilies quite unknown to our gardens a few years ago, and though that appears small by the side of the tall-growing kinds, we now figure one which represents a still smaller set of lilies, and is as small when compared with

THE SMALL-FLOWERED LILY (*Lilium callosum*).

Kramer's Lily as that is dwarfed by the side of the towering *L. auratum*, and the still larger kinds. Indeed the present species seems so far removed from its giant relatives that we look upon it as something to be nursed and petted, while in fact it is quite as hardy as any. The engraving gives *Lilium callosum* of the natural size, and it will be seen to be even smaller than the "Small-flowered Lily," *Lilium parviflorum*, figured a year or two ago. The botauical name, *callosum*, refers to the fact that the hracts, or upper leaves just below the flowers, are callused, or hardened, and appear of a different texture from the other leaves. The name will translate into "Callused Lily," which, though not a very pleasing name, is sufficiently descriptive. The flower, usually firm in texture, is of a bright scarlet color, of a very lively tint, and the whole aspect of the plaut is most pleasing. We have only tried it in out-door culture, but have no doubt that it would be a capital species to force in pots. The native country of this species is Japan, which has so largely enriched our gardens with lilies.

The past summer's experience with lilies has shown the great value of our native species when brought into cultivation. There are three species common throughout the United States, and these vary in a most surprising manner, not only in the size, color, and markings of the flowers, but in their time of blooming. Those who live in the country can make a most showy and interesting collection if they will bring into the garden the hulbs of the various wild lilies they may find. By giving them a rich soil, and leaving them undisturbed, they will increase in size and beauty from year to year.

The Bag—or Basket—Worm.

Whatever other crops may be short this year, it is not that of insects. In early June so many were the inquiries, with specimens, that we might almost say that the Army Worms marched into our office in procession. In late July there is another procession, but it is now of Bag-Worms or Basket-Worms. These must be in unusual abundance, to judge from the specimens brought and sent by mail, and while they seem to he more abundant on the Arbor-Vitæ, than elsewhere, fruit trees are also troubled. We figured and described the insect in the September number of last year. It is a small, black, and very voracious caterpillar, which makes for itself a bag or covering of bits of the leaves and their foot-stalks of whatever tree it may feed upon. This sack completely hides the caterpillar, as it goes ahout the trees devouring the leaves, and is thus concealed from birds and other enemies, while it eats and grows. The perfect insect is a small moth. The female undergoes her changes, lays her eggs, and dies within the sack, which she has first taken care to attach securely to a twig, while the male moth quits the sack and flies about. In spring the eggs hatch, and the young insects will come forth, to eat, make other sacks, and continue the round, and when they are numerous the tree is baldy injured. Like other leaf eaters, we have no doubt that Paris Green or London Purple would destroy them, but usually they are not so numerous that hand-picking will not answer. The trouble is that it is only when the trees are partly stripped that the insects are noticed. At their first appearance it is but a small task to remove them, but when, as in one case, a long Arhor-Vitæ hedge is "full of them," the picking is no small job, but as said before it seems to be the best way to meet them.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Renovating Old Walls.

A short time ago, we saw the walls of an old house that had just been renovated, and it looked so neat and clean, and the work was evidently so inexpensive, that we sought out the workman, Mr. H. B. Gardner, who had planned and executed the job, and here give his method of doing it. The old walls, before they were taken in hand, were in a very bad state, being rough with loose patches of white-wash, and so much cracked and discolored that the rooms were in a hardly habitable condition.

The method is as follows: "First hrush down the walls, to remove the dust and any loose plaster or white-wash, then, having prepared a stencil of the figure desired (figure 1 shows one which may be easily drawn, and cut out of paste-board, or stiff paper), lay the stencil upon the place desired, and with some thick varnish, or paint having some thick or gummy varnish mixed with it, go over the pattern, using a stiff bristle hrush. This will leave the pattern clearly defined upon the wall; then immediately sand over the pattern, while the paint is still fresh, using fine, white sand (Rockaway sand), well dried, and free from dirt. The sand will adhere to the 'sticky' paint, and give the pattern a rough appearance. When the paint, holding the sand, is dry, gently dust off all loose particles, and apply a coat of paint over all—roughened pattern, smooth wall, etc." Figure 2 shows the interior of a room with the walls renovated and decorated in the manner above described.

Fig. 1.—THE PATTERN.

Another plan for making an old wall appear well, is to go all over it with strong glue-size—laying

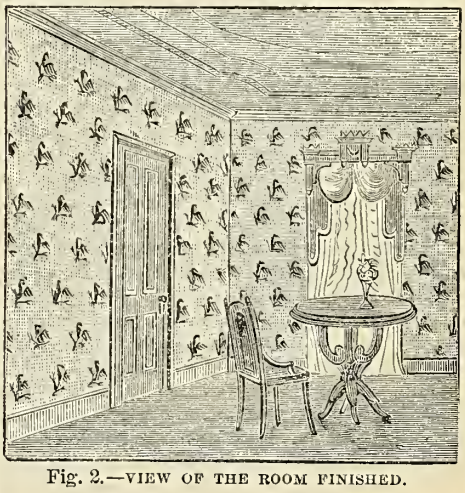


Fig. 2.—VIEW OF THE ROOM FINISHED.

on the same with a common white-wash brush, and immediately throw sand over the whole before it dries; then, in order to give it the appearance of stone, lay out "stone-work," by simply scratching through the freshly applied rough coat, using a straight edge, and a sharp stick. When all is dry, apply paint, whitewash, or kalsomine over all."

Mr. Gardner recommends the following as an excellent white-wash: "Partly fill a tuh with good unslacked lime, (say half a peck), and throw in a pint (dry measure) of finely pulverized glue (comminuted glue), then add sufficient water to slake the lime; the heat engendered in the slaking of the lime will melt or cook the glue, and there will be no such thing as 'rubbing off' to the white-wash, when spread upon the wall. The writer would prefer this white-wash to kalsomine, not only on account of economy, hut it makes a much cleaner and also a more durable finish."

The Carpet Beetle (also called "Buffalo Moth.")—This destructive household pest works

under the edges of the carpets, making holes near the margins. The larva are about three-sixteenths of an inch long, and clothed with dark hairs, those at the tail forming a sort of a pencil. The most effective remedy seems to be the passing of a hot flat iron over a folded sheet, which has been wet and laid along the edges of the carpet. An abundance of steam is thus formed, which, descending, kills the "worms," or moths, as they are generally called. When the insects have infested articles of clothing, these may be put into a tight box, and some benzine poured in, the vapor of which will soon destroy all the moths. The full-grown insect is a beetle, and should be destroyed whenever met with. It is about one-eighth of an inch long, and handsomely marked with scarlet, black, and white.

Home Topics.

BY FAITH ROCHESTER.

Lessons at Home.

Sometimes it is very inconvenient to send children to school, so that their chance for early education depends upon the parents. Some find it a pleasure to teach their children, while others consider it the hardest kind of work. Much depends upon the disposition of the child, there being a great difference in their natural inclinations. All children really love to learn. That is, they love to know such things as seem to them worth knowing, and often the judgment is a very childish one. Some can not see the use of the letters of the alphabet, or why they should learn the multiplication table, and though you explain their use, they secretly believe that they could get through the world without them, and I sometimes wish that they could. I have taught my children at home a good deal, even when free schools that were called good were close at hand. I found that they could keep up with their classes, or with children of their own age, without spending more than half the time in study that children spend in school, and so they had more time for play and for that domestic education which goes under the head of "helping mother." The hardest thing about it is to train them, especially the ones who want all play, to the habit of going regularly to their lessons, whatever may be the enticements elsewhere. A mother, as usually situated, can not "keep school" while carrying on her household employments. The children must learn to study without her. Rollo's mother (who does not know the Rollo of Jacob Abbott's excellent Rollo books?) managed this matter well. Rollo had already learned to "read, write, and cipher" alone, but was not yet ten years old. His mother gave him a desk in a pleasant corner, where he could keep his books, slate, pens, ink, and papers safe and orderly. She expected him to spend a certain time there every day, while she gave no attention to him. I believe it was two hours. I forget just how the time was divided, but arithmetic and writing were the chief divisions. At the end of his study time, or as soon as convenient, his mother looked over what he had done, explaining to him and questioning him as she saw that he needed, and pointing out his work for the next day. If he could not do the work that came next in order in his arithmetic, or which his mother had marked out for him (she did not tell him "how *far* to take"), he filled out his arithmetic time by practising examples that he did understand. In the writing hour he wrote whatever he chose, often writing letters to his mother, or father, or Jonas, or cousin Lucy, and sometimes copying. His mother looked this over, giving criticisms and suggestions. They taught him that legibility was the one thing especially needful in writing, and that the particular fashion of the letters was of small account compared with this.

I have been much interested in an account of the revolution in the schools of Quincy, Mass., under the influence of Charles Francis Adams. Few text books or "systems" are used there now. Interesting books of history and science are read instead of "Readers," and *from this reading, carefully attended to*, are learned, not only the facts communicated by the words read, but grammar, spelling, and rhetoric; besides a greater interest is kept up.

Something About Books.

In teaching our children at home, we can follow suggestions of this kind more fully than teachers in public schools are able to. For children of ten years or more, at least for those who have learned to read with some fluency, there are excellent books that might better be learned by simple reading, *with attention*, than by committing lessons to memory. Miss Hall's Geographies are very good for this purpose. They tell about "Our World" in a very interesting manner. "Little Lucy's Wonderful Globe" is the best book I know of to start an interest in geography among very little ones. It should be read with a globe, if possible, and very good small ones can be got for $1.50. This book should be read aloud two or three times by mamma, a chapter at a time, pointing out on the globe the country mentioned. Then comes Miss Hall's first book, also read aloud by mamma to the younger ones, but no harm is done if children learn little or no geography until they are old enough to read this book for themselves. It is more important that they should learn to observe things immediately about them—to take an interest in the growth of plants and habits of animals, etc.

I find Felter's First Arithmetic the best I have seen for beginners. The slate-work takes them along easily, with little trouble to me. Then comes (with us) Lydia Nash's Table Book and Rudiments.

I have not been able to give my children at home good desk-room and regular study hours. I often wish I could see some capable person "step into my shoes," and organize my work of various kinds, with a baby (bless it!) under three years of age, always one of the component parts; organize it so that it would move along from day to day with all the ends kept up even, and all done decently and in order. With my very moderate abilities, and lack of financial resources, I have not been able to avoid a considerable "helter-skelter." But I did begin to feel much encouraged last winter when I saw three children go regularly to their lessons soon after breakfast, learning them somehow, in spite of baby's interruptions and mamma's sick days, reciting to each other sometimes, but, somehow, making progress. At our house, the *health* and *happiness* of the children are valued above any mental precocity.

Summer House-Keeping Made Easy.

Not every family can keep house with so little heat and labor during the warmest summer months as the one I shall tell about. It is not a system that could be adopted by the farmer's family in the midst of haying and harvest, but even farmers' families may find suggestive aid from this report, and many a small family in town may go and do likewise in some respects.

There are regularly five members in the family, the youngest a year and a half old, he being the only masculine member. To save fire and heat, it is the plan to have only one warm meal a day, the breakfast; but on washing, ironing, and baking days there is usually a warm dinner. Unless there is a fire at noon, the dishes are all washed together once a day—except the goblets and knives.—"I thought cold dinners were not healthy," says a neighbor.

That depends chiefly upon the materials of which the dinner is made. If the usual meat and vegetables are replaced by an extra supply of pie and cake, they are decidedly unhealthy. But this family manages otherwise, and less pie and cake are eaten under the present system than formerly. Not a pie has been made or eaten in the house since the summer system went into operation, some months ago, and much less cake and butter are used. (It is not my own table and bill of fare that I am reporting, but I happen to know all about it.) The three women of the family are all workers, and have good appetites, without any particular cravings or sense of lack at present. The body is *nourished* by the food eaten, because it contains good nerve and muscle food. It is palatable, and is eaten with a relish, which leaves no call for salads, condiments, or sweetmeats. Fruit is used, but not extravagantly, seldom more than once a day. It is the most expensive item; acid fruit is much extolled as a medicine, a corrective of bad conditions of the digestive apparatus. But keep your liver and stomach in order by plain and wholesome fare, and you need not use fruit as a *medicine*, though you may gladly eat it as food, more or less, as the appetite and purse agree. Beefsteak comes in sometimes for breakfast, but usually as a surprise, and then it is remarked "how little meat we eat," and one and another testifies, "I do not miss it at all," or, "I never think of wanting it."

Well, there is always nice white yeast bread and good butter, and sweet milk. There is, besides, some preparation of graham flour or oatmeal, and these form the staple, the most nourishing part of the meal. The oatmeal (from Canada) is always in the form of mush, either hot or cold. It is soaked over night, and cooked for breakfast in a farina kettle. The long soaking makes it cook quicker than otherwise. Various dishes can be prepared from oatmeal, but in the family I mention the mush, eaten simply with good, rich milk (thin, sweet cream is best) is so much liked, that no one has cared to try any other way. Graham is prepared as gems, the flour mixed with buttermilk or sour milk (in either case the proportions, carefully observed, of one *level* teaspoonful of soda to two teacupfuls of the milk), with very little salt, and a tablespoonful of sugar added. These ingredients are mixed quickly and thoroughly together (the soda dissolved in a little warm water), and baked in gem pans, but the same dough can be baked in a cake tin as a short-cake. The graham is sometimes in the form of yeast bread, and sometimes as mush or graham pudding. Persons often find that oatmeal and graham mush do not agree with them, because they eat so much sugar upon them, and they can hardly believe that these dishes are delicious when eaten simply with good milk, especially if the milk is thin cream! All good mush is nice sliced when cold, and fried on a hot-buttered griddle, and in this way it often comes to my friends' breakfast table—not fried hard, but browned on both sides, eaten with milk, butter, or meat. The various vegetables of the season have their place at the breakfast table or at dinner, on the days when there is a fire at noon for something besides cooking. "Granula," a new-fangled preparation of wheat, very easily prepared, very nourishing, and very good, comes in conveniently quite often. When fresh fruit can not be had, my friends use mostly the best canned fruit, the California pears and peaches being most expensive. This simple style of living was not undertaken for the sake of economizing money, so much as for the sake of saving time and strength and comfort (during a season when a fire is uncomfortable), and also in the interest of "high thinking," for plain living and high thinking are supposed to go together. That may be because plain living (if it is at the same time nourishing) keeps the body in good order, and leaves the mind a fair chance to do good work and have a good time.

A Few Small Arts.

MASHED POTATO.—To make it light and delicate, beat it with a spoon after you have seasoned it. Mash it well, salting it first. It is often made too salt for my taste, and as I can not take out the salt, it sometimes seems to me it would be quite fair to put in only a little, and those who do not care to taste anything else but salt in their food can add it at their pleasure. Butter is sometimes added when the potato is mashed, but I think thin cream the best of anything, and next to this good sweet milk. Now stir all thoroughly together, beating it well with a large, stiff spoon. The product is something quite superior to the lumpy, poorly seasoned mashed potato often found. A dish may be called "well-seasoned" when only enough good seasoning is used, and that properly put into or upon it.

TO STONE RAISINS EASILY.—Pour boiling water over them, and drain it off. This loosens them, and they come out clean and with ease.

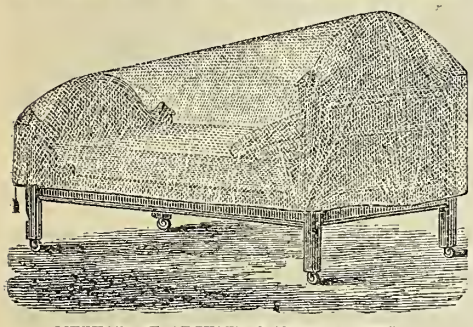
TO PEEL ANY KIND OF FRUIT EASILY.—Pour boiling water over it, and this loosens the skin.

TO REMOVE BITTERNESS FROM THE SKINS OF WILD PLUMS.—Pour boiling water over them, enough to cover them, and remove them quickly before they crack open and lose their juice. Do

not add soda; it does not help a particle, and if the plums do crack open, the soda spoils their flavor. This scalding is done simply to prepare them for being peeled for preserves (if you choose to take that trouble), or to remove the bitterness before the next step in making jelly or preserves.

Keeping Away from the Mosquitoes.

Perhaps the title should have read—keeping the mosquitoes away from us—but the end is the same,



METHOD OF ADJUSTING THE NETTING.

namely: the escape from the poisonous "bites" of those widely spread pests of summer. We are accustomed to speak of *the* mosquito, as if there were but one kind; naturalists have named and described over 30 different species, some of which are very rare; some fly only by day, others only at night, but all agree in having blood-thirsty females, while the males neither sing nor sting, but lead innocent lives at play among the flowers. Some of the most savage are only to be found in the damp, dense forests, where they breed in swarms and fill the air with their piping. Fishermen and hunters and their experienced guides would not visit the backwoods without the strong-smelling mixture of tar and oil with which they smear all exposed parts of the body. Only those persons who have gone unprotected into the home of the wild mosquitoes of the forest can know how savage and unrelenting are their wholesale attacks. But it is the escape from the attacks of these pests at our homes that most interests us. Our means of defence may be planned to keep them out of the whole house the entire season, or they may be arranged to protect each individual. In the first method any opening that may allow mosquitoes to enter the house must be provided with some barrier against them. This may be of musquito netting or fine wire cloth, and placed at every window and door. Only thorough work will answer, and it is poor economy to leave some little-used windows unprovided with screens, as these are the very windows that some one will open, and one open unscreened window makes all the other screens useless—indeed worse than useless, as they will serve to keep the mosquitoes in the house that are let in elsewhere. Screens for the windows are sold at the furnishing and furniture stores; but the majority of our readers will no doubt prefer to make them in the workshop. It is poor economy to put together a temporary makeshift. Our set was well made five years ago, and are apparently good for as many years to come, only that at the most used door has needed some mending of the wire cloth. The frames are of $\frac{7}{8}$-inch stuff 2 in. wide, mortised at the corners and put together with glue. The wire cloth is neatly tacked on, and a narrow plain moulding put on to cover the edges. The frames are of just the size of the lower sash. Those edges that come next to the window frames are rabbeted with a $\frac{5}{16}$-in. tool, making a square groove of that width and depth. Strips $\frac{5}{16}$-in. square are fastened to the window frame with small brads, and the grooves upon the screen-frames slide upon these. Rubbing the pine with burnt umber stain and a coat of shellac-varnish gives a proper finish. The door frames are made rather heavier with a piece of the same stuff across at the middle. They have each a spring that will promptly close them. With these frames put at the windows and doors early in the season, not only do we enjoy freedom from mosquitoes, but from flies, only a very few entering. If mosquitoes are not kept out of the house in this or some similar manner, then at least the beds should have nets. The nets can be quite simple and cost but very little, or an ample canopy can he made, such as are in use in southern houses. The one we have used with great satisfaction is made of six yards of common white mosquito netting, doubled in the middle, and stitched together on one side, thus forming a double width with a loop or hold at one end where the breadth was turned upon itself. This hood just fits over the head-board and holds one end of the netting securely in place, the other being drawn down and laid over the foot board, securing it, if necessary, with a large pin, and the whole screen is ready. During the day it may be thrown over the head-board or spread ready for use as desired. The cost of the whole protection is 60 cents, or perhaps less. The comfort afforded each night by such a screen is out of all proportion with the cost, and if well cared for will last two or more seasons. The more costly bed canopies are of various styles; some of them are attached to a frame which is so arranged that it can be drawn up to the ceiling by means of a cord and pulley; they can be procured at most house furnishing stores. The beds of children, especially, should be well screened, as their tender flesh is much more attractive to mosquitoes than that of grown people.

Handy Window Holders.

It is a convenient thing to be able to raise the sash of a window to any desirable hight, and then have it securely held at that point, and at the same time be readily let down or moved up higher. All this is made easy by a handy Holder which Edward E. Eyles, Alleghany Co., Pa., has had in use for some time, and who kindly sends a sketch and model. The notched strip of wood is 3½ feet long and one inch wide, and is fastened to the window casing, as shown in figure 1. The key is 4½ inches long and one inch wide, and is placed upon the lower portion of the sash. The key has a small projecting pin by which it can be readily moved. The working of this Holder is very simple; all that is necessary is to push up the window as far as desired, and adjust the key to one of the notches. In lowering the sash the key is slipped out and the window is ready to descend. With the illustration, but little explanation is required.

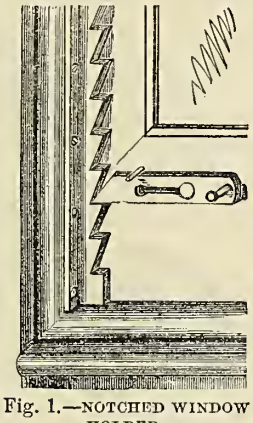


Fig. 1.—NOTCHED WINDOW HOLDER.

The sketch of another style of window stop is sent by "R. B. K.," Columbia Co., Wis.; it is another easily constructed device for holding a window sash. The key, or catch, is as shown at *A*, and consists of a thin piece of hard-wood, so cut as to fit into notches made to receive it in the jamb. A person with a scroll saw could make these catches very rapidly, and at the same time of pleasing shape. If the window is to be held down, the upper end of the key must fit into an inverted notch in the casing. Some such convenient device as those mentioned here should be provided for all windows that are frequently opened; it is far better than using a loose stick, or still worse, a book as a prop for the window sash.

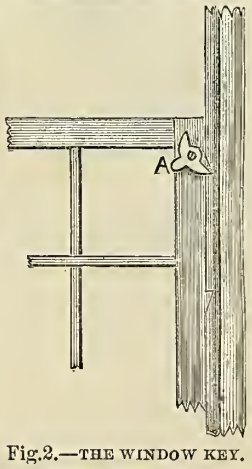
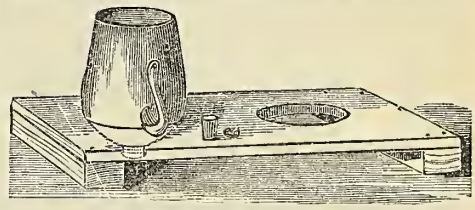


Fig.2.—THE WINDOW KEY.

Household Notes and Queries.

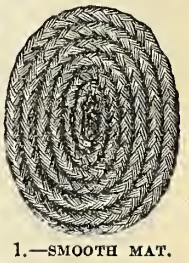
A JUG RACK.—The accompanying engraving of a rack for holding a jug, is sent by "J. W. R.," and consists simply of a shelf in which are holes through which the neck of the jug may pass, and the jug he held in an inverted position. The importance of such a rack is evident to any housewife



A DRAIN RACK FOR JUGS.

who has to keep jugs sweet and clean. It is a difficult thing to properly drain a jug without some such arrangement for keeping the mouth downward, and this one, that can be so easily provided, will doubtless be acceptable to many. The water jug for the field, of all other vessels, should be thoroughly drained, and left dry, when not in use, and there is no better way to do this, than to have a small shelf for it like the one here given.

CORN HUSKS.—There are a number of important uses to which corn husks can be put in domestic economy. When stripped into shreds by a hatchel, they make excellent material for beds, cushions, etc., as many farmers already know. Another important use for corn husks is in the manufacture of mats for the door. For this, the roughest and heaviest outer husks should be selected, and braided together as tightly as possible. There are two principal kinds of door mats—the plain braid, which is sewn into the desired shape with stout thread, or where a double husk is woven into the plait at every turn-over, the braid being afterwards sewed into the mat as before. In this last, the interwoven double husks project at the upper side, and form a sort of rough brush—the mat when finished, appears as in figure 2. The smooth braid mat is shown in figure 1. A cheaper and more easily made mat is constructed as follows: Take the head of a flour barrel, and bore inch holes into it, close together; insert into each hole a closely rolled bunch of husks, so that the thick ends project a short distance above the board. A wooden peg is driven into the centre of each bunch, to keep it in place. When a mat of this kind becomes worn, it can easily be renewed by replacing the old, worn-out bunches of husks, by new ones.



1.—SMOOTH MAT.

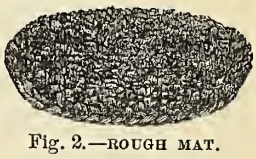


Fig. 2.—ROUGH MAT.

WINDOW AWNINGS.—A shade of some kind for the windows, during the hot months of summer, is almost a necessity. This should be kept in mind by the architect, and in designing the house, provision ought to be made for a permanent shade for the windows, or most of them on the first story, by means of piazzas, verandas, etc. Windows in the upper stories can not be thus protected, and should be provided with temporary screens for them. The difficulty with screens, awnings, etc., has been that the shutting off of the sun's rays, has prevented the means of proper ventilation. In this respect, an outside screen is much better than one placed inside the window, and the appearance of the room is vastly more comfortable. The awning can, and should be, made so that it can be let down from the top a short distance, and then with the upper window sash lowered, a free circulation of air is secured. Instead of nailing the upper side of the awning to the window frame, have it fastened to a wooden bar, or small iron rod, which should be arranged so that it can be drawn up by a cord passing through a small pulley at the top of the window casing, thus securing a free passage of air.

BOYS & GIRLS' COLUMNS.

The Doctor's Talks.

Last month I left our regular talks about *Matter*, and its properties, and took up the making and sending up of Balloons. When one is off of the track, it is sometimes easier to stay there than it is to get back again, and as the weather is quite too hot for much exertion, I think we will remain off of the track for another month at least. We have heretofore been talking about Matter in its solid form, and though there is much more that might be said, we must get ahead and see what liquids and gases, or

WATER AND AIR,

have to interest us. These are matters that require more study and thought than either you or I care to give in these mid-summer days, and for the present month we will, by way of variety, talk about the contents of a box that I found upon my table a few mornings ago. The box came, and with it a note which in brief asked—"What is it?" A question that comes almost every day in the year, and with reference to such a variety of things! That is right, young people, when they meet with a thing that they do not understand should ask—"What is it?"—and if you begin to ask this while young, let me assure you that you will never get so old that you will not need to ask the same question of your young days—

"WHAT IS IT?"

I do not say this to discourage you—far from it—for it is one of the great charms of the study of natural objects, that the whole can never be learned, but there is always some new thing, and the more we know the greater is our desire to learn. But to our box. Upon opening it there were found several curious balls of dry earth, of the shape and size shown in figure 1, as if some one had rolled up mud into pellets and allowed it to dry. An answer to the question—"What is it?" might have been "Mud Balls." But in such matters we must learn all that such a thing can teach us, and if the outside tells us nothing, the next step is to see what is within. When you come across a thing that is quite new to you, you must learn about it all that your unaided senses will tell you. These balls were plainly made of earth; handling one of them it was found to be much lighter than one of solid earth would be, hence must be hollow; shaking it, something was both felt and heard to rattle, and, of course, there must be something within. "What is it?" comes up again. How shall we know what is inside? "Open it"—you will say, and that is just what I did. But there are various ways of opening such a ball, and if we do not know what we are to find we must be careful to so open it as not to injure the contents; in this case the way would be to pick off one little piece of the shell after another until the thing within can be seen.

Fig. 1.—THE BALL.

WHAT WAS WITHIN THE MUD BALL,

is shown in figure 2. And you will at once say, it is an insect of some kind, quietly coiled up, but as you can learn, if you touch it, still alive. An insect in this state of rest, or dormant (meaning sleeping), is called a *pupa* or *chrysalis*, and the case containing it is a *coccoon*. Before we try to learn what insect we have in hand, let us see what we have been doing. You have no doubt read of noted naturalists, some who by studying plants have become eminent botanists, others by the study of rocks, are known as geologists; still others study insects, others give their time to birds, and so on, and such students sometimes become known the world over, each as an eminent naturalist in his line. Now, all that the most learned of these men has done, is just what we have been doing with our mud balls. The most eminent naturalist is only engaged in trying to make the plant, the bird, the rock, the insect answer our every day

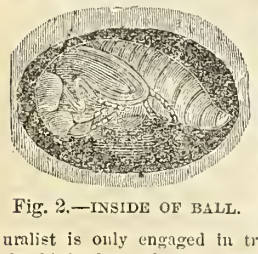


Fig. 2.—INSIDE OF BALL.

QUESTION, "WHAT IS IT?"

and this he does by examining how it is made, outside and inside. You have no doubt heard of the great naturalist Agassiz, who died a few years ago. I once heard some one express to him wonder at some of his discoveries. Agassiz said: "I look at ze thing, I put down what I see. You look at ze thing and see it ze same, and zat is all."—This side talk is to impress upon you the fact that there is nothing about either branch of Natural Science as it is called, to prevent any country boy or girl from studying it; the objects are everywhere around them, and they have only to examine them within and without, using carefully their eyes and other senses, to find an endless source of instruction. Now we

GO BACK TO OUR MUD BALL

The quiet insect is there, and we may go back and learn what it was before it came there, or go on to see what will become of it. As we have it in its earthen coccoon, it will be as well to follow it and see what it will do next "Zip, zit, boom"—are the sounds as you read at evening by the lamp, and you at once know—at least if you live in the country—that a May-bug, or June-bug, or a Dor-bug is in the room. Some nervous people may be afraid of it, but you know it to be perfectly harmless, as far as any harm it can do to you goes, so you watch where it falls, pick it up and put it out of the window—but as you put it out it is well to give it such a squeeze between the thumb and finger that it will never fly or move again. Some may not know this "bug," as it is called, but beetle as it properly is, so I give its portrait in figure 3, as the perfect state of what is shown in the imperfect state in figure 2. A few of these beetles come into the house, attracted by the light, but if in seasons when they are abundant, you were to take a lamp out into the orchard, or where there are other trees, you would be astonished at the numbers that would come about, and sometimes they are found at work in the trees in such numbers that they may be shaken down and caught by the pailful. All beetles are not trouble-some in their perfect, or winged state, but this one feeds upon leaves, and sometimes does much damage by stripping the trees of their foliage. This is one reason why I advised you to give the one caught indoors a sharp pinch—to prevent it from doing any more mischief itself, but especially prevent the harm its progeny might do, as each female beetle will in time enter the ground and there

3.—THE BEETLE.

LAY 40 OR 50 EGGS,

which soon hatch and produce small, white grubs—or "worms" as they are commonly called—but the proper name for these and all other insects in this state is *larva*. These *larvæ* (plural of larva) go on feeding for some three years upon what they find in the earth. At the proper time, they form the mud balls with which I began their story, and at length come out as beetles. Before I say anything about the ways of the grub or larva, I want to call your attention especially to these changes, as they are what happen, in one way or another, to all insects. I have here given in brief the different changes of the June-bug, and as I find that many grown persons do not know that insects take on these different forms, and the order in which they follow one another, I wish to impress upon you "the order of their going." We have first the *egg*, second the *larva*, which may be known as grub, maggot, caterpillar, and oftener under the general term of "worm." This, in making its growth, changes its skin several times, and at last becomes a *pupa*, in which state it is usually quiet for awhile, and looks quite unlike the larva from which it was formed. In some cases the pupa is formed underground, but in many others it is covered in a coccoon of silk, and attached to trees, etc. Sooner or later, the pupa bursts its covering, and the perfect insect or *imago* appears. In this case a beetle, in others a butterfly or moth, or it is a two-winged or a four-winged fly, or some other insect. I can not now speak of the different kinds of insects, but merely say that in all we find these different states, and these changes more or less complete.

Fig. 4.—THE WHITE GRUB.

REMEMBER THAT, EGG, LARVA, PUPA, AND IMAGO,

or perfect insect, is the order of these wonderful changes. Now we come back to the larva of our June-bug; small at first, it feeds upon the minute roots of grasses, and is not noticed, but in time it gets large enough to be known as the White Grub, and (fig. 4) is as large as your little finger. In this state it is one of the farmers' worst enemies, as it eats the roots of nearly every plant it meets. I have known it to take the roots of young fruit trees as large as your little finger, cutting them square across; it will make great holes in the potatoes; it will get into the strawberry patch, and plant after plant in a row will die, its roots all cut off, before the grower finds out the trouble. I can not tell you all the mischief it does, but perhaps its worst work is in grass lands, quite ruining the finest pastures. One of my friends near Boston has a place noted for its many acres of beautiful lawn. A few years ago, he saw his fine green turf turn to brown, and found his grass had no roots, but he could roll up the sod as if it were a carpet. He had to sow his lawn anew, and I happened there at the time when he had a dozen or more men who picked up these grubs by the bushel. But I can not tell you more about the damage this grub does. Like other insects, it

HAS ITS NATURAL ENEMIES.

Other insects prey upon it, and crows, often accused of doing mischief when really doing a good work, take many, as do skunks, and it is said that hogs will root for and kill them. But the enemy that is likely to be of the greatest help in keeping the grub in check, is not an animal, but a plant! Several years ago we had sent us some white grubs, each bearing one or two enormous

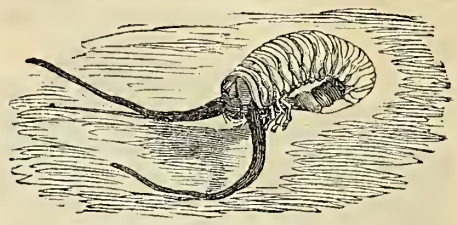


Fig. 5.—FUNGUS ON WHITE GRUB.

horns, as shown in fig. 5. An examination showed these to be plants which were growing upon the grub, in fact planted in and feeding upon them just as other plants grow in and feed upon the soil. This plant sometimes attacks the grubs in vast numbers, so that nearly every insect is thus ornamented. The plant is a kind of *fungus*, the family of plants to which the toadstools as well as the mildews, rusts, and blights belong. This gives you a glimpse of one of the wonderful relations between animal life and plant life. Experiments are being made with the hope that this fungus may be made useful in destroying the white grub. Instances in which insects live upon and injure plants are common enough, but for a plant to live upon and destroy an insect—for a white grub that has these plants attached to it must soon die—is quite unusual.

THE DOCTOR.

A Picture Puzzle.—The scene which is here given is one made up of rocks, trees, and the sea. There is nothing particularly strange in the way in which the

rocks are arranged to make the cliff, and why shouldn't the trees grow just as they are represented? The picture is then, as far as the trees, rocks, and sea, are concerned, a natural one. But do you see anything more than has been mentioned? This matter must be left to each one to find out. When once seen—and it is liable to be seen at once—it is always there as plain as a nose on a man's, or anybody else's face whenever one looks at the picture.

Our Puzzle-Box.

CROSS-WORD.

My first is in schooner but not in brig,
My next is in whisker but not in wig,
My third is in elbow but not in knee,
My fourth is in meadow but not in lea,
My fifth is in baton but not in stick,
My sixth is in mortar but not in brick,
My seventh is in always but not in now,
My eighth is in forehead but not in brow,
My ninth is in album but not in book,
My tenth is in scullion but not in cook:
The answer you'll find if you properly seek,
It is something that happens just once a week.

C. F. W.

ANAGRAMS.

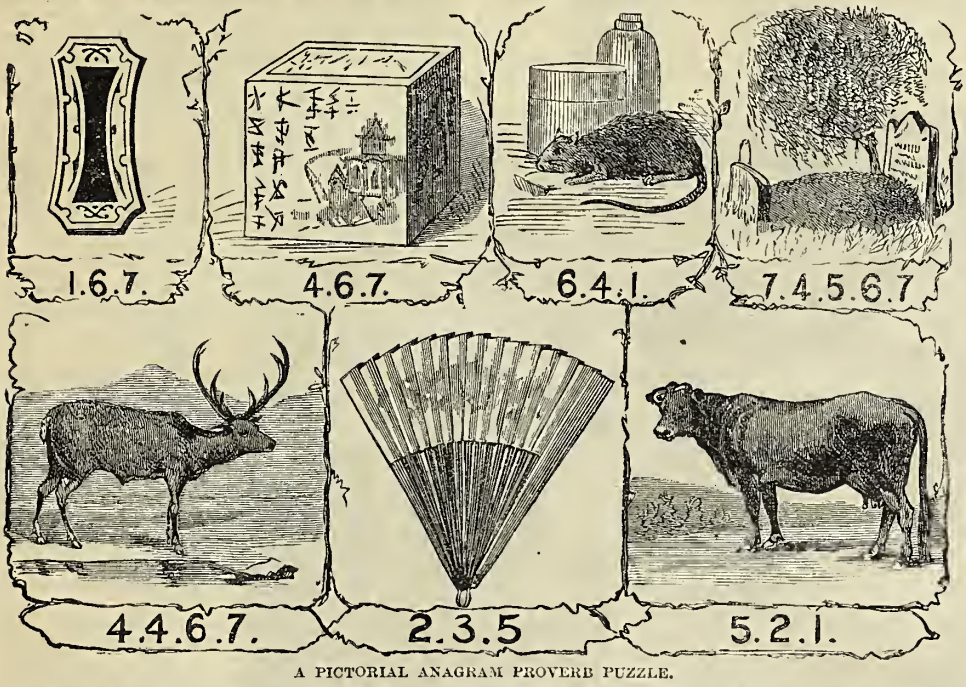
1. Rail O big chap!
2. Licks a berry.
3. Mad in sod.
4. A. C. anchored.
5. Such of Dave.
6. A mere tune.
7. I merit a slip.
8. Be tanning.
9. Unkind grate.
10. Ann wears blue.

TRANSITIONS.

(In the following puzzles you are to change only one letter at a time until you resolve the first word into the second. For instance, to change *cat* into *dog*, do it thus—cat, cot, cog, dog. Some might do it thus—cat, bat, bag, bog, dog; but the former is the more creditable, having the fewer changes. It will add to the interest, if several of you take the same words to metamorphose, and see who will accomplish it first, and in the fewest moves.)

1. Change June to July.
2. Change two to six.
3. Change cane to went.
4. Change mine to bond.
5. Change pool to lake.
6. Change book to play.

(and any other changes that may suggest themselves to you. Of course you are not allowed to coin words, but must use only such as are to be found in the English dictionary.) AUNT SUE.



A PICTORIAL ANAGRAM PROVERB PUZZLE.

The answer is a proverb of seven words. Each numeral under the pictures represents a letter in that word of the proverb. Get your slate, or piece of paper, and write down the first seven numerals in a row. Take, for example, the "fan" above; put the F under figure 2, the A under figure 3, and the N under figure 5. Write down the names of the other things represented, letter by letter, under the given numerals, in the same way, until you have put them all down; then arrange the letters to form the right word, until you have the 7 words necessary to complete the proverb.

POSITIVES AND COMPARATIVES.

(*Examples.*—Positive, an animal; comparative, fresher. *Gnu, newer.* Positive, a fastening; comparative, part of a wheel. *Tie, tire.*)

1. Positive, to divide; comparative, a city.
2. Part of a dress-maker's small trimmings—an animal.
3. A pronoun—a period of time.
4. A blow—an article of apparel.
5. What many object to take—a support.
6. An adjective—a kitchen utensil. BESSIE.

DECAPITATIONS.

1. Behead a word sometimes sad and sometimes glad, and leave a number.
2. Behead a breath and leave a reptile.
3. Behead a certain article of food and leave what you do with it.

NUMERICAL ENIGMA.

I am composed of 32 letters:
My 1, 11, 24, 20, 25, 27, 22, 8, is a nunnery or monastery.
My 6, 8, 2, 9, 16, is to overwhelm.
My 13, 5, 3, 7, is a kind of tooth.
My 4, 14, 10, 31, 29, 30, is to slope.
My 32, 15, 12, 23, is to bark.
My 17, 26, 8, 15, is dismal.
My 19, 18, 21, 30, is to yield.
My 6, 28, 23, is to plunge.
My whole is one of Baron Rothschild's maxims, and contains good advice.

DOUBLE ACROSTIC.

1. A dialect.
2. A goddess.
3. A flowering pot.
4. A Shakspearean character.
5. A West India island.
6. A mixture or medley.
7. A flag or banner.

The primals and finals name two of Scott's characters. ISOLA.

CHARADES.

1. My first is a mold, my second an article, my third a trap; my whole is often used by ballet dancers.
2. My first is under, my second is a conjunction, my third is a noise, my fourth we all do; my whole is subject. GUILIELMUS.

ANSWERS TO PUZZLES IN THE JULY NUMBER.

DROP-LETTER WORDS.—1. Abstemious. 2 Topography. 3. Progenitor. 4. Investment. 5. Fraternity. 6. Curmudgeon. 7. Seamstress. 8. Remunerate.

MIXED PROVERBS.—Where there's a will there's a way. Necessity is the mother of invention. Many hands make light work. Time and tide wait for no man. Brevity is the soul of wit.

DOUBLE ACROSTIC.

Parrot—Monkey.

P—al—M
A—lonz—O
R—aisi—N
R—ac—K
O—rang—E
T—urke—Y

CROSS-WORD.—Pinchbeck.

CHANGED HEADS.—1. Bight, might, light, sight, wight, fight, right, tight, eight, night.

METAGRAM.—SHADE: in which may be found the words—has, had, dash; shad, head, sea, ash; he, she; as; sad; a; ah!

OPPOSITES (*Geographical*).—1. Lapland. 2. Iowa. 3. Sleepy Hollow. 4. Jackson. 5. Sicily. 6. Providence. 7. America. 8. Annapolis.

PI.—There was once a doctor who, when asked what was good for mosquitoes, wrote back, "How do you suppose I can tell unless I know what ails the mosquito."

NUMERICAL ENIGMAS.—1. Be sure you are right, then go ahead. 2 Westmoreland County.

TRANSPOSED PROVERB.—Honesty is the best policy.

ILLUSTRATED REBUS, No. 478.—Be what you seem to be, but above all be honest.

"Dicky," or Our "Horned Toad."

BY ARCHER.

A few years since, a friend in Texas sent me one of those curious little reptiles known as the "Horned Toad." Poor little fellow, he is dead now, a victim to the teeth and jealousy of the red and silken-haired setter that lies at my feet. In the first place this odd looking little fellow was not a toad at all, but merely a gentle and harmless kind of lizard; he had a long tail like others of the lizard family; and why they should call him a "toad" I am sure I can not understand. My little Kissa said when she first saw him, "he is ossel homely," but then, as she afterwards remarked when she had fairly made his acquaintance, he was "dreadful dood." Yes! and he was good, for a more quiet and inoffensive creature could not well be found; and his little black eyes would sparkle with pleasure when he heard my voice, or when I took him from his box and laid him on my desk. Certainly he must have known that I never made sport of his ungainliness; moreover it was I that always brought him food. It was amusing to see him put out his cunning little tongue for a fly with a quick little dart-like movement, and funnier still to see it disappear with a gulp down his throat, after which he would wink and blink his eyes with satisfaction; then he would raise his head, twinkle his eyes and wiggle his tail, as much as to say, "Some more of the same sort if you please, sir!" And how he could eat! He never had enough; and I verily believe that if I had a bushel of flies to give him he would have eaten them, or died in the attempt. He was a piggish little fellow anyway, never being entirely satisfied with what he received from our hands.

THE SO-CALLED "HORNED TOAD" OF TEXAS.

The scientific title of my little pet, that is, the name bestowed upon it by naturalists, is "*Phrynosoma cornutum*," and I thought to call him by the name of "Tappy," for short: but the children at once raised a great cry, declaring that it was an "ugly name," and thereupon dubbed him "Dicky" on the spot, and "Dicky" he was ever after. I said he was homely, and so he was; but after we had him a little while we did not think so. How he looked you can know from the engraving; you have only to imagine a creature like that, about the length and width of your hand, that is, supposing you are eight or ten years old, and you may have some idea of our "Dicky." His flat, toadish sort of a body he could blow up and swell out to twice or three times its usual size when he liked—as the frog in the fable did when he wanted to be as big as an ox. He was covered with a lot of little spines or thorns, extending down his back, along his sides, and on to the tail. Those upon the edges of the body were regular prickles like saw teeth; and four or five little horns projected back of his head on the nape of the neck, looking as if he wore a collar of leather stuck full of carpet tacks. His color was not unlike that of a common toad, with a grayish-yellowish mottled belly. But he could change these colors at will, seemingly, to look like what he might be lying on, much the same as does his cousin the chameleon. When on my desk, he would manage somehow, especially when flies came sailing by, to look like the dark-green cloth that covers it; and once when placed on the russet-colored plush of the buggy seat, he looked so much like it, that on one occasion I did not notice him, and nearly sat down on him.

"Dicky" did not like dead flies, and would not touch them unless very hungry, and not always then. He preferred to catch them for himself, though he would frequently take them from my fingers. He would lie on the window seat for hours, enjoying the warm sun, perfectly quiet until some fly came buzzing close by, when he would open his sleepy eyes, and with a quick dart of his tongue gather the insect in. If the wind should stir dead flies, or if I breathed upon them, he seemed to think them alive, and they would disappear down his little throat one by one with amazing rapidity. He would eat some spiders, others again he would not. A "Daddy-Long-legs," or "Father Gray-beard," he specially disliked; and if one were placed before him, he would puff out his body, arch up his tail, and then back off, at the same time opening his mouth and gaping as if very much frightened; and if it insisted on going towards him, he would shuffle off as fast as his stumpy legs could carry him. Another thing, he did not breathe as most animals do, in a regular manner, but like turtles, taking the air into his mouth and swallowing it, where it could be conveyed into the lungs at pleasure. When the cold weather came, "Dicky" was inclined to go to sleep, to *hybernate*, as it is called, so we rolled him up in some cotton and laid him away in his box on a shelf in a dark closet; and though he was frequently taken down and examined, he never showed any signs of life until the following spring, except once when he was left a few moments in a very hot room. Well, as hinted before, the dog killed him, after we had him a little over a year. The children cried and vowed they would have nothing to do with "Hark" any more, and even mamma looked teary about the eyes. I don't know but I could have cried myself with but little effort. In his native home in Texas our "Dicky" would doubtless have enjoyed himself less, because there he would have hid among stones and rocks to escape from danger; but he might have had a longer life and a less eventful one than it was. [We have several times received specimens of these toads from our readers

in Texas, which came "alive and well" in little boxes by mail. Any of our young readers having friends in Texas and desiring such strange-looking "pets," can most likely get some of them by writing for them.—EDS.]

Another of the 'Ologies.

The Boys and Girls have not had an 'Ology for some time—not since we spoke of Zoölogy in the May number. We have a great many kinds of fruit sent to us to name, that is, Mr. A. has a peach that he does not know the name of — the label has been lost or something, or Mr. B. has, as he may think, a new kind of pear, or Mrs. C. a fine grape which she wishes us to see and taste, or Miss D. has "a tree of her own which has borne some fruit for the first time," or even Master E sends us a little box all nicely packed full of choice plums which he wishes us to eat, with his compliments. Now, all this is *Pomological* and the questions of this sort in regard to fruits are questions in *Pomology*. This was the first 'Ology that we had.—But not all the boxes that come contain fruits. There are a good many that, when opened, reveal some great beetle, some curious colored "worm" or destructive insect that may be eating the tomato vine, currant bush, or, as was the case with the army worm a few weeks ago, making great havoc with the crops generally. All these questions about insects come under the head of *Entomology*—a Greek word which means a telling all about insects—that part of knowledge which has to do with those little six-legged animals, like fleas, June bugs, butterflies, etc., which we call insects. When one of these little boxes comes and we find upon opening it that it contains a bug or a beetle—there is a difference between a bug and a beetle—or a moth, etc., that we are not familiar with, then we turn to a number of books in which these various — yes thousands of—insects are described, explained and pictured, and find the one that is like the one sent. All this is looking the insect up in the books on Entomology. An *Entomologist* is one that has made a study of insects and become acquainted with the world of bugs and butterflies. This is well for every boy and girl to do as much as possible.—In this way you will understand Entomology, or the science of insects; in fact, become an Entomologist.

At the Fair.—As we look over the premium lists of the various State, County, Town and other Fairs that are now coming to our office, we frequently find a "Youth's Department," in which prizes are offered for various kinds of things that can be made or raised by children. This is as it should be; and for the sake of the boys and girls we say to all—Something should be done for the children at the fairs—so that they, as well as their fathers and mothers, may be exhibitors. But if your fair has no Children's Department you ought to go all the same, and see all the fine things that grown folks bring. It is not best to go entirely for the fun of the thing, and spend all the time in the side shows that are very ready to take up your time and your money. If you are a boy it may be that you will be the most interested in the cattle—the fine steers, etc., or it may be that the poultry will be the most attractive, and by spending an hour or so there you may learn something about the different breeds that will be of use at home. The girls will naturally enjoy the display of household goods, the fine quilting, embroidery, wax work, flowers, etc. The fair is a great place for gaining information if the time there is rightly employed.

The Tired Nut-Gatherers.

When I was a boy! What a world of things come into my mind at the thought contained in those five short words—"When I was a boy." How they carry me back to the happy days of my childhood when everything was new to me, because I was new to the world. To the time when my tough, bare feet were ready to go anywhere and for anything that my childish fancy might suggest was worth the while. No city life was mine; the fields of my early days were the green ones of the country, and perhaps therefore the more interesting in memory. Like most boys, I had a mate with whom I spent most of my play hours, sharing our pleasures and pains together—helping each other into petty troubles, and as eagerly helping each other out. If the sheep were to be washed, George and I were together, and the lambs had their wool made perhaps a little whiter by our squeezing, though fun, rather than clean wool, was what we were after. When the steers were old enough for the yoke, it took both of us to manage them. The watermelons that George had cared for in his garden were mine, and the peaches and pears in our orchard were his by the same right. It was silently understood between us that our things were in common—a no uncommon thing with boys, and girls too, that are mated. One of the most pleasant times in the whole year was when the nuts were ripening on the trees. To gather a fine lot of them for the long winter evenings was our ambition, as it is of nearly every boy that I have ever met. On this *one* point squirrels and boys agree, and at nutting time, if not the whole year, these two kinds of nut-gatherers are not in love with each other. That which troubled us most was the earliness in the season with which the squirrels opened their work. It seemed as if they knew that in order to get their winter's supply of food, they must get into the trees before we did. Besides, they had their whole time from early morning to late evening, and every day in the week, Sundays not excepted. They had no water to carry to the thirsty workmen; they had no chores to do around the house, no errands to the village or the neighbors—Saturday afternoons were not holidays to them, because, as we thought, the squirrel's life was a kind of perpetual holiday. One year the squirrels were uncommonly thick, and the nuts were not so abundant as usual, both of which facts combined to make our showing for a good supply of winter nuts a poor one. The chattering nut-gatherers seemed to come in swarms, and the woods resounded to the hunter's gun, but with little effect upon the numbers of the fur-bearing, nut-loving animals. All this while the nuts were growing scarce, and George and I knew it, as we did our part of the farm work — carrying a plow point to the back field, or helping to build a fence along the wood lot. It was aggravating to us to see them so saucy in their way of taking off our nuts. At last, Saturday afternoon came, and we were bound to do what we could to drive the squirrels from the wood lot, and at the same time get all the nuts we could for ourselves. It was a hard day's work, but we felt that it was our last chance, and we went into the fight, so to speak, with a will. If we could get but few nuts we would at least make it troublesome for the squirrels to add much to their stores. We had a big time, but we would not say we had the worst of the bargain. To follow a running squirrel who has the highway of the fence, or the tall tree tops, when you are obliged to dodge around trees and stumble over stumps and stones, is not an easy matter; but in the excitement of the chase it can be done for hours without a thought of getting tired. This was our experience; but in the *long run* the squirrels have the best of it, and though "driven from the field" they can claim a sort of victory, because they come out ahead. All that afternoon we ran and climbed—rushing through thickets and over brush fences, through deep ravines and up hillsides, following first one squirrel and then another, until it was lost in the dense foliage of a tall tree, or safe at home in some hollow log. As the sun got low in the western sky we found ourselves far from home in the thickness of the forest. We had chased a little noisy nut-gatherer to his storehouse, and were paid for our trouble in the hat full of nuts which we raked from the end of an old hollow basswood log. We felt tired, and sat down to rest and have a taste of the fruits of our pursuit. We found a good place near some rocks, upon the side of an open ravine, and with a small stone began to crack and eat some nuts. We did not crack and eat long before we fell asleep, and went over again in our dreams the exploits of the day. The moon was well up when we awoke, and by its pale light two tired boys—though somewhat rested by the long nap upon the mossy stones—found their way home and went quietly to bed. The other day we saw a picture made by Messrs. Harrout and Bierstadt, that reminded me so much of how George and I must have looked as we rested on the mossy rocks, that I have had our artist engrave it for the boys and girls of the great *American Agriculturist Family*. You can not but enjoy the nap of the Tired Nut-Gatherers, as it is taken in each other's arms upon the rocky edge. A penny for their thoughts you may say, but no money will buy their dreams; they were ours to keep. I can not go farther with our squirrel hunt—and perhaps you may think we went far enough with it as it is told—but must leave you, hoping that fewer squirrels and more nuts may be your good fortune—that you may be less tired at the close of your nutting afternoon, and have less holes in your clothes than did George and your UNCLE HAL.

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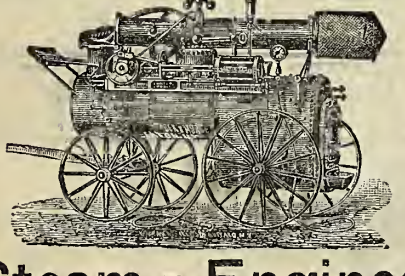

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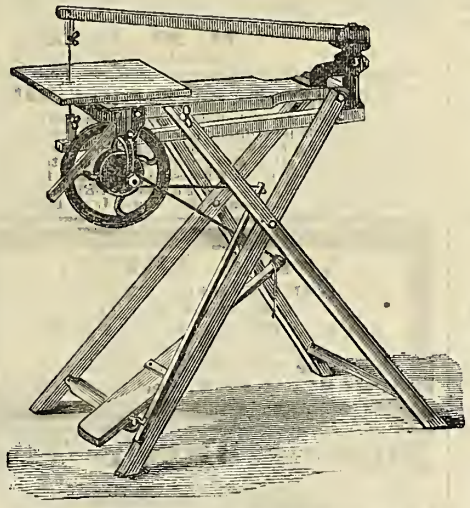

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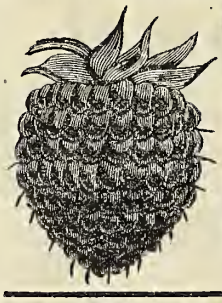

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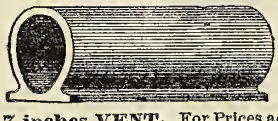

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Our stocks of the above are **super excellent.** In localities where our **Turnip Seeds** are not sold by merchants, we invite CATTLE-BREEDERS, SHEEP-BREEDERS, DAIRYMEN, HORSEMEN, GARDENERS, to apply for **Retail Price and Descriptive List.** Address postal card to **D. LANDRETH & SONS, Philadelphia, Pa.**

ELLWANGER & BARRY

ROCHESTER, N. Y.,

Offer the largest and most complete Stock of Fruit and Ornament Trees in the U. S. Priced Catalogues sent as follows: No. 1, Fruits with plate, 15 cts.; plain, 10 cts. No. 2, Ornamental Trees, etc., with plate, 25 cts.; plain, 15 cts. No. 3, Greenhouse, **Free.** No. 4, Wholesale, **Free.** No. 5, Catalogue of Roses, with beautiful colored plate, 10 cts.; plain, **Free.** No. 7, Catalogue of Strawberries and Small Fruits, **Free.**

BEAUTIFUL WINTER FLOWERS.

Hyacinths, Tulips, Crocus, Narcissus, Lilies &c. My Catalogue Hardy Bulbs and Plants for fall planting and winter blooming is now ready and sent free to all. I offer the best collection of Lilies (80 kinds) in the country. My Bulbs are warranted first class and true to name. My prices are low, send for a Catalogue. I send by mail postpaid 12 named Tulips for 50c. 6 named Hyacinths $1.00, 9 named Lilies $1.00, all different and beautiful sorts. Address, J. LEWIS CHILDS, QUEENS, N. Y.

THE DINGEE & CONARD CO'S
BEAUTIFUL EVER-BLOOMING
ROSES

We deliver **STRONG POT ROSES** for Winter Bloom and Fall Planting, *safely by mail*, at all post-offices. Five Splendid Varieties, *your choice*, all labeled, for $1; 12 for $2; 19 for $3; 26 for $4; 35 for $5; 75 for $10; 100 for $13. Send for our **New Guide to Rose Culture**, and *choose from over* **500 Finest Sorts.** Our **Great Specialty** is growing and distributing Roses. **THE DINGEE & CONARD CO.,** Rose-Growers, WEST GROVE, CHESTER CO., PA.

ROSES, POT-GROWN, and FROM OPEN GROUND. **Bouvardias** in variety. Send for Trade List. **WM. H. MOON,** *Morrisville, Pa.*

ROSES **FOR FALL PLANTING.** *Liberal Premium offered every order* received before October 1. *Send for circular, and secure your* **Premium Rose** *now.* WM. B. REED, Chambersburg, Pa.

GRAPE VINES FOR FALL PLANTING. **6 Concord or 3 Rogers Vines** *by mail* for **$1.** Vines **very fine.** Send for circulars. Address WM. B. REED, Chambersburg, Pa.

GRAPES **Prices lower than ever. Largest Assortment** of **old** and **new** varieties. Plants of **best Quality;** at doz. rates **free by Mail,** and **SMALL FRUITS. Send for Price List.** Address **BUSH & SON & MEISSNER,** BUSHBERG, Jefferson Co., Mo.

GRAPE VINES **VERY LOW!** Send postal for Descriptive Price-List. Prices lower than the lowest. All stock *warranted true to name.* EVERETT BROWN, Bluff Point, Yates Co., N. Y.

DUTCH BULBS OF EVERY KIND. LILIES, TULIPS, HYACINTHS, Etc. **Write for fall list, which will contain many novelties, and all at very low prices.** J. C. VAUGHAN, 45 La Salle St., Chicago, Ill.

CHAPMAN & VAN WYCK,

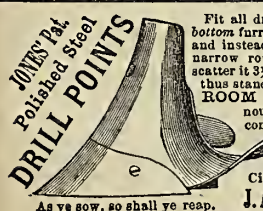
(Established 1849),

DEALERS IN

PERUVIAN Guano

EXCLUSIVELY,

170 Front Street, New York.



Fit all drill boots, run level, cut *flat bottom* furrows, cover with *mellow* soil, and instead of *crowding the seed* into narrow rows but *one inch in width*, scatter it 3¼, 4, and 5 inches; the plants thus standing *wider* apart, have more **ROOM TO STOOL,** derive more nourishment from the soil, become more vigorous, and produce better developed average heads. Send for Illustrated Circular with Testimonials to **J. A. JONES, Wilmington, Del.**

As ye sow, so shall ye reap.

"I was in my brother Tom's wheat about a week ago, and I really believe there is one-third more wheat where it was drilled with your points. Tom told me he had measured some rows and found *sixty-three* heads in the same length of row, against *forty-two* of the old way of drilling."
H. CLAYTON (Pres. Citizens' Nat. Bank of Middletown, Del., and farmer).

"I got five bushels to the acre more wheat where I drilled with your points than with the old style. I gave them a fair test, showing you no favor."
JOSHUA CLAYTON, JR., Mt. Pleasant, Del.

HALLADAY
STANDARD WIND MILL.

VICTORIOUS AT Phila., 1876—Paris, 1878.
25 Years in Use.

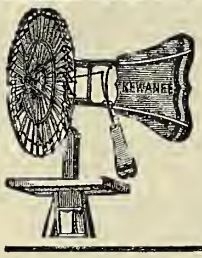
GUARANTEED SUPERIOR To any other Windmill Made.

17 Sizes—1 Man to 45 Horse Power.
Adopted by the leading R. R. Co.'s and by the U. S. Govt. at Forts and Garrisons.

$3,500,000 worth now in Use.

Send for Catalogue **"A."**

U. S. Wind Engine & Pump Co., Batavia, Ill.



Ne Plus Ultra
Automatic Windmill.

(New Model), ten foot diameter of wheel. One horse-power; elegant and durable, made expressly for **raising water for farm and house uses.** PRICE with pump $50.00, delivered at any R. R. Stations on main lines east of Mississippi. Any person can set them up. **KEWANEE M'F'G CO., 35 Broadway, N. Y.**

The IRON DUKE WIND MILL is the Best and Cheapest

for the following reasons:

It is ALL IRON. Is Self-Regulating. Will pump with less wind than any mill ever made. Will not shrink, warp, split, decay, and will stand more work than any mill extant.

DON'T BUY till you have received our Circular.

O. S. GILBERT & CO., Manufacturers, **Indianapolis, Ind.**

THE IRON TURBINE
WIND ENGINE.

STRONG, DURABLE, **Best in the WORLD.**

THOUSANDS NOW in USE.

BUCKEYE Force PUMP

NEVER FREEZES in WINTER.

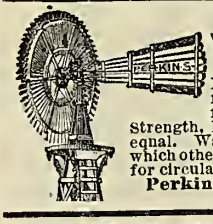
MANUFACTURED BY

MAST, FOOS & CO., SPRINGFIELD, O.

Send for Price List and Circulars.

We manufacture the old reliable **Stover**—the well tried, strong, durable, self-regulating, solid wheel **Wind Mill,** which took *the* Centennial Diploma, as well as a Medal. We refer to the **Official** Centennial Report. Also O. E. Winger's Improved $20.00 double Feed Grinder, which is operated by Pumping Wind Mills—a novel and perfect Mill for grinding all kinds of grain for stock and house use. Agents wanted everywhere. Send for catalogue **B.** Branch Factory at Kansas City, Mo.

E. B. WINGER, Successor to STOVER WIND ENGINE CO., **Freeport, Ill., U. S. A.**



THE PERKINS' WIND MILL.

Was the first solid Wheel Wind Mill that governed itself successfully. The Best in the market for the last 10 years. For Beauty, Strength, Durability, and Power it has no equal. Warranted to stand any storm in which other substantial buildings stand. Send for circular with full description and prices. **Perkins' Wind Mill & Axe Co., Mishawaka, Ind.**

Our "A. B. C." Corn Sheller

AND

"Common Sense" Cutter

For Hay and Stalks—have taken the highest premiums everywhere. Send for Circular.

A. B. COHU, 197 Water St., N. Y.

Grind your bone meal, crush your own oyster shells in the **$4.00 Hand Mill.** Larger sizes for farmers—to run by power. Testimonials furnished. FRANK WILSON, 52 Delaware St., Easton, Pa.

N. J. State Agricultural Society, 1880.

The 22nd Annual Exhibition will open at Waverley Monday Sept. 20th, and continue five days. For Premium Lists address F. T. QUINN, Cor. Sec., Newark, N. J.

STEEL WIRE HAY BANDS.

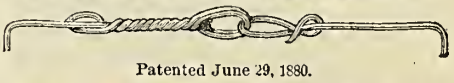
IMPROVED WIRE BAND.

Patented Oct. 3, 1876. Jan. 9, 1877.

EXCELSIOR WIRE BAND.

Patented March 10, 1868. Reissued March 23, 1869.

ADJUSTABLE WIRE BAND.



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MADE OF THE BEST SELECTED STEEL WIRE.

The strongest and most convenient Hay Bands ever offered.

WRITE FOR PRICES.

Orders or letters of inquiry will receive prompt attention. Address

BROCKNER & EVANS,

Sole Manufacturers. Importers of Galvanized Wire Nettings and Sheep Fencing. Dealers in Patent Steel-Barb Fence Wire.

422 West Street, New York City.

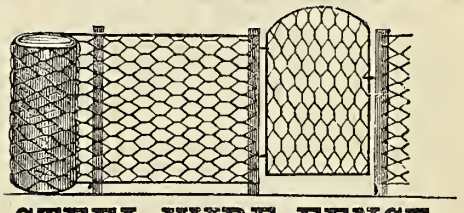
GALVANIZED
CABLE FENCE STRAND.

The only Wire Fence that stands the test of time.

NO BARBS.

PHILIP S. JUSTICE, 14 N. 5th St., Philadelphia, Pa.

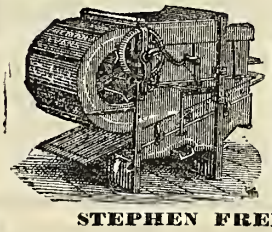
SEDGWICK BROS.,



STEEL WIRE FENCE.

Is the only general purpose wire fence in use. Being a strong net-work without barbs, it will turn dogs, pigs, poultry, as well as the most vicious stock, without danger to either fence or stock. It is just the fence for farmers, gardeners, stock-raisers, and railroads; very desirable for lawns, parks, or cemeteries. As it is covered with rust-proof paint it will last a lifetime. It is superior to boards in every respect, and far better than barbed wire. We ask for it a fair trial, knowing it will **wear** itself into favor. The **Sedgwick gates,** made of wrought iron pipe and steel wire, defy all competition in neatness, lightness, strength, and durability. Ask hardware dealers, or for price list and particulars address **SEDGWICK BROS., Richmond, Ind.**

The "Centennial" Fanning Mill.



The best mill in the world. It separates Oats, Cockle, and all foul stuff from wheat. Is also a perfect cleaner of Flax, Timothy, Clover, and all kinds of seeds. The great improvement over other mills is that it has two shoes. It is especially adapted for warehouse use. Send for Descriptive Circular and Price List. Liberal discount to dealers.

STEPHEN FREEMAN & SON, Racine, Wis.

I. X. L. SPRING TUG LINK

Patented Feb. 3d, 1880.

Affords the greatest protection to **HORSES,** Harness, Wagons, Plows, Mowers and Reapers. Reliable and guaranteed as represented. Protect your Horse, save your money, by procuring the celebrated **D. RISHER & CO.'S** I. X. L. Spring Tug Link. Ask your hardware man for them, or send to D. RISHER & CO., Corner of 4th and Wood Streets, Pittsburgh, Pa.

EVAPORATING FRUIT.

SENT FREE Treatise on improved methods. Tables, yields, prices, profits, and general statistics. AMOS STOUFFER, Chambersburg, Pa.

$1000, REWARD

For any Washing Machine that will Wash Cleaner, Quicker, with Less Labor and Wear and Tear of Clothes than the

ROBBINS FAMILY WASHER AND BLEACHER, PAT'D OCT. 3, 1871.

THE ORIGINAL AND ONLY PERFECT SELF-OPERATING WASHER IN THE WORLD.

No rubbing required. No more yellow clothes nor hard work on washing day. It will wash anything from a lace curtain to a horse blanket, and can not get out of order.

Good Agents Wanted, both Male and Female, to whom Liberal Inducements are Offered. Agents can make from $10 to $100 per week.

THE ART OF CLEANSING FABRICS

is yet but imperfectly understood by thousands of good house-keepers. The numerous devices of friction rollers, pounders, squeezers, dashers, agitators, steam wash-boilers, etc., have all failed in one or more of the three essential points, namely: The saving of labor, wear and tear of clothes, or in perfectly extracting the dirt and discoloration; all of which are accomplished by the ROBBINS FAMILY WASHER AND BLEACHER.

WHAT IS IT REMOVES THE DIRT?

You may ask washer-women and house-keepers, and your answer from nine out of ten will be, "Plenty of elbow-grease," or in other words, laborious rubbing upon the wash-board. And such is the case, for you first rub soap upon the cloth, and then you have to *rub it in* to make the dirt soluble; but does that remove it? No; to do that you must dip it in the water and rub repeatedly to *force water* through the fabric, again and again. That is what removes dirt after having been softened by the chemical action of the soap.

The way in which this could be most economically accomplished has been developed in the FAMILY WASHER AND BLEACHER, which embodies all the above points.

Mechanical devices take the entire time of a person during the whole wash, and will not remove streaks from clothes. With the Washer and Bleacher, washing, baking, and housework are contemporaneous operations—the fire doing the washing and baking, while the housewife does her housework.

It is harder work to operate these *mechanical devices* than to use the common wash-board. They are constantly getting out of order, and wear out in a short time. They wear out clothes faster than the rubbing-board, because the friction is so much greater.

All who have tried steam wash-boilers will unite with us in saying: They do not give satisfaction.

WE WILL EXPLAIN WHY.

As stated, *water force* is what removes dirt from the fibre of the cloth. A large body of water is required to hold in solution a comparatively small amount of dirt. Steam wash-boilers *cannot* accomplish the desired result. They do not contain enough water to hold the dirt in solution.

In order to remove the dirt from *steamed* clothes, they must be washed out in water at nearly boiling heat, for if you use water at a lower temperature it causes the fabric to contract, which "sets the dirt," thus causing the clothes to turn yellow. An essential thing to be mentioned is the *rotting* of clothes by *steam wash-boilers*, because of the small *quantity of water* used.

Everybody knows that a large quantity of soap dissolved in a small body of water must necessarily form an *exceedingly strong alkali*, which, after the clothes are *packed* in the steam wash-boiler, is converted into steam, every moment becoming more concentrated till the clothes are removed. A few such washings and what is the result? Simply this: Your clothes fall to pieces of their own weight, and you pronounce *steam wash-boilers* (as they are) *a failure*.

THE PRINCIPLE OF THE WASHER AND BLEACHER embodies all the essential points. First, we have the desired heat which expands the fabric and causes it to discharge the dirt. Second, we obtain a powerful suction beneath the clothes, which produces a rapid *downward current* or *water force* through and through them, thereby removing the dirt. Third, we use a *large body of water*, which holds the dirt in solution. Fourth, we use but a small quantity of soap. Fifth, the washing is done by water, and *not by steam*. This process cannot injure fabrics. It cleanses thoroughly, *rinsing the clothes* being all that is required to complete the operation.

THE PHILOSOPHY OF THE WASHER AND BLEACHER IS THIS:

We have 5 lbs. of metal, which attains a much greater degree of heat than the water surrounding it, consequently the water *underneath* the Washer becomes hotter and more expansive than in any other part of the boiler, and is thereby thrown to the surface through the tube; thus tending to produce a vacuum underneath the Washer at the bottom of the boiler, into which the water is rapidly drawn.

As it passes along the channels of the Washer, the curved and contracted throats of which prevent its flowing backward, it becomes hotter and hotter, consequently more expansive and more forcible until thrown to the surface, thus producing a powerful suction beneath the clothes *through which* the water *must pass* in a rapid *downward current*, thereby obtaining a *water force* which cannot be obtained by any other method known in cleansing fabrics. Thus, we get a combination. **FIRST, WE HAVE THE DESIRED HEAT. SECOND, PERFECT CHEMICAL ACTION OF THE SOAP. THIRD, FORCE OF WATER—ALL OF WHICH ARE REQUIRED TO THOROUGHLY CLEANSE AND PURIFY ANY FABRIC.**

THE IMPROVED WASHER,

has a perfect fitting pipe, and is a combination of metals which does not become sticky or dirty. It comes out of the boiler as bright as new.

THE CAPACITY OF THE WASHER AND BLEACHER.

There are two sizes: No. 1, the family size; No. 2, suitable for small hotels, restaurants, and barber-shops, boarding-houses, etc.

The Washer is composed of metal and cannot get out of order.

The family size weighs about 5 lbs., and is only 8 inches long by 5 inches wide, and 1¾-inch deep.

The discharge pipe is 13 inches high over that, and is 1½ inch in diameter. It throws water in a solid, unbroken stream, at the rate of 6 to 8 gallons per minute. It will work in any flat bottom boiler. It takes only 3 or 4 ounces of soap in 10 or 12 gallons of water, and will wash bed or table linen, a boiler full in 10 to 15 minutes, wearing apparel in from 10 to 30 minutes, and will remove streaks without rubbing; requires no previous preparation of the clothes, such as soaking over night. Take the clothes dry, and when the Washer gets *thoroughly at work*, fill the boiler as full as it will hold by gently pressing them down with a stick. Use no chemicals, only good soap and soft water. If the water is hard, it may be softened by a small piece of borax, which is harmless.

FOR LACE CURTAINS this Washer is *invaluable*. It cleanses them as no other process can, and without the slightest danger of injury.

No. 2, or small hotel size, is 8½ in. long, 7¾ in. wide, 1¾ in. deep, and weighs about 8 lbs. It will work in a flat-bottom boiler holding 15 to 25 gallons, and wash of average pieces from 1,500 to 2,000 per day; or it may be used in any smaller boiler that has a flat bottom large enough for it to rest upon.

For hospitals this Washer is pronounced by the medical faculty invaluable, being the most *powerful disinfector* known; leaving the fabrics pure as when new. By bleachers and chemists it is said to be the most powerful method of removing dirt and vegetable matter from fabrics ever known.

THE INDUCEMENTS WE OFFER.

We want a Local Agent in every town in the United States. We *know* from experience that reliable, energetic men can make money selling the Washer and Bleacher in any community.

We want first-class men as GENERAL AGENTS; men capable of managing one or more counties.

To such we give a duly executed Certificate of Agency.

We furnish descriptive circulars for distribution among families. Also large posters for advertising in public places. Printed directions for using are sent with each Washer.

The retail price of No. 1 WASHER, in New York, is $3.50; No. 2 WASHER, $5.00; No. 1, $24.00 per dozen; No. 2, $36.00 per dozen.

SAMPLE, OR SINGLE WASHERS.

WE SEND SINGLE OR SAMPLE No. 1 WASHERS, PREPAID, TO YOUR NEAREST RAILWAY EXPRESS OFFICE, in any part of the United States east of the Mississippi and Missouri Rivers, also in Kansas, Nebraska, Arkansas, Louisiana, and Texas, for $3.50.

SPECIAL NOTICE.

As to the reliability of this Company, we refer you to the MERCANTILE NATIONAL BANK of this city, or to any Express Company in New York. Also to the Publishers of the following named well known leading journals, viz.:—New York—*American Agriculturist*, Weekly *Sun*, Weekly *Times*, Weekly *Tribune*, Weekly *Witness*, Weekly *World*, *Christian Advocate*, *Christian at Work*; Boston—*Youth's Companion*, *American Cultivator*; Chicago *Inter-Ocean*, Cincinnati *Gazette*, Springfield *Farm & Fireside*, St. Louis *Journal of Agriculture*, Detroit *Free Press*, all of whom have frequently editorially endorsed *us* as well as our *Washer*.

From the N. Y. Weekly *Tribune*, May 19, 1880:—"Washers Again.—We have several inquiries concerning the Robbins Washer and Bleacher. It does exactly what is claimed for it, and cheap at ten times its cost."

In ordering, write plainly your name, post-office, county, and State. Also the name of the express office to which you wish the Washer forwarded.

CASH MUST ACCOMPANY ALL ORDERS.

Remit by Post-office Order or Registered Letter. We insure the safe delivery of all Washers ordered as above. Money may also be sent by draft on New York.

Send for a sample and secure A BUSINESS THAT WILL PAY YOU WELL.

When you order or write, mention this paper. Address

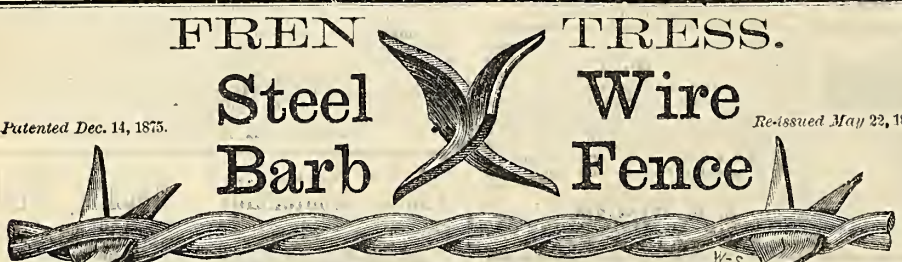
Bissell Manufacturing Co.

50 BARCLAY STREET, NEW YORK.

FRENTRESS.

Patented Dec. 14, 1875. *Re-issued May* 22, 1877.

Steel Wire Barb Fence



The Best and Most Durable of All Barb Wire in Use.

A sure protection, cheaper than board or rail fence, and good for a lifetime. Wastes no ground. Has no weedy fence row. When the best costs no more than an inferior article, always look for the **best.** We claim for the **Frentress a Superiority over all other Wires.** For Circulars and Price Lists address

ST. LOUIS WIRE FENCE CO.,
814 & 816 N. 2d St., St. Louis, Mo.

FRENTRESS BARB WIRE FENCE CO.,
East Dubuque, Ill.

CARPENTER'S

Iron Fence-Post AND POST-DRIVING DEVICE

Is universally conceded to be the most practical, cheapest, and durable post ever invented; has been thoroughly tested the past season, and gives general satisfaction. Two men can put up and finish 100 rods per day in any soil.

Send for circular.

JAMES CARPENTER,
Moravia, N. Y.

FARM GRIST MILLS And Corn Shellers.

Over 25,000 Now in Use.

Every Machine is fully Warranted. Price of Mills, $15 to $30. Sheliers, $5. Don't buy a **Mill** or **Sheller** until you have seen our terms and Illustrated Circular. Address

LIVINGSTON & CO., Iron Founders, Pittsburgh, Pa.

CORN AND COB MILLS.

WARRANTED

Superior to any in use for all purposes.

CORN SHELLERS

all sizes.

FEED CUTTERS, Etc.

Satisfaction guaranteed. Send for Circulars and prices. Manufactured by

WHITMAN AGRICULT'L CO.
ST. LOUIS, MO.

Agricultural Analyses.

A. R. LEDOUX & CO.,

ANALYTICAL & CONSULTING CHEMISTS,

LABORATORIES AND OFFICE, **17 Cedar Street, New York City.**

CHEMICAL ANALYSES AND INVESTIGATIONS OF ALL KINDS.

AGRICULTURAL CHEMISTRY A SPECIALTY,

Analyses of Superphosphates, Chemicals, Feeding Stuffs, Soils, Marls, Waters, etc., etc.

☞ *Special contracts made with Agricultural Societies, Farmers' Clubs, Granges, and Manufacturers.* ☜

ONEONTA CLIPPER.

This Plow contains the most remarkable improvements ever made in Swivel Plows. It is easy to handle, with **Shifting Handles,** which enables the operator to walk with both feet in the furrow. The Hook or Latch is operated by the foot, so that the Plow is turned ready for use **without taking the hands from the handles.** Light to draw, firm, strong, and durable. Constructed of Patent Hard Metal, which is as strong and will scour equal to steel. We also make it of charcoal iron, at a less price.

An Illustrated Catalogue of all our Tools and Implements sent free.

THE BELCHER & TAYLOR AG'L TOOL CO.,
Chicopee Falls, Mass.

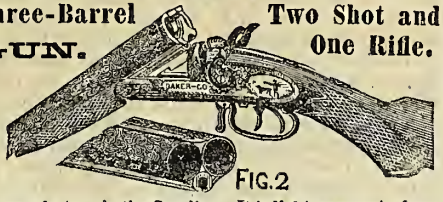
BUGGIES

for the TRADE. TERRITORY given. ENTERPRISE CARRIAGE CO., Cincinnati, O. Catalogue FREE.

THE BAKER GUNS.

We make the best double gun in the world for the money—choke-bore, rebounding locks, extension rib. Our $40 gun has the best English twist barrels, and the best material throughout. All guns sent on trial and guaranteed. Price—Best English Twist Barrels, $40. Damascus steel, $55 to $200. Send stamp for Descriptive Circular.

Three-Barrel GUN. Two Shot and One Rifle.

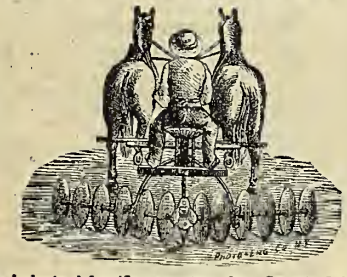


A new feature in the Gun line. It is light, compact; from 8 to 10 lbs. in weight. The Rifle is perfectly accurate. It has proved a great success for all kinds of shooting. All guns shipped on trial and guaranteed. Price $75 to $250.
L. C. SMITH, Sole Maker of Baker Guns, Syracuse, N. Y.

$14 SHOT GUN! The Best Double-Barreled Shot-Gun in the world for the money. Warranted genuine twist, with *Rask, Belt Box Wads, Box Caps and Wad Punch.* Also our celebrated Kentucky Rifle *for $12, warranted or no sale.* Send for Illustrated Catalogue and Price Lists to **James Bown & Son,** Enterprise Gun Works, *136 & 138 Wood St., Pittsburgh, Pa.*
ESTABLISHED, 1848.

La Dows Jointed Pulverizing & Smoothing
DISC HARROW.

Light, Simple, Durable & Flexible.

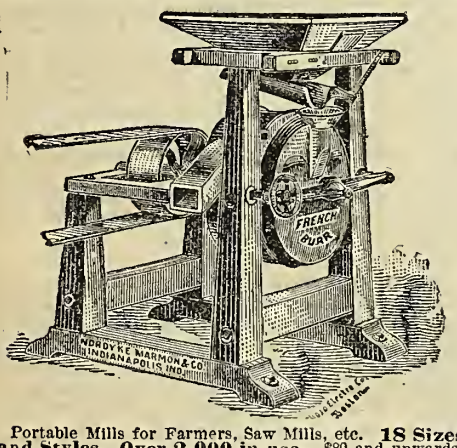


Being jointed in the center, is adapted to both smooth and uneven surfaces. Acknowledged the best of the kind, and will pulverize and cover seed better in one operation, than going over twice with others. Made with both Chilled Metal and Cast Steel Discs polished. Send for circular and price list. Manufactured by

WHEELER & MELICK CO.,
Albany, N. Y., for the United States.

By EVERETT & SMALL, Boston, Mass., for the N. E. States, and by Budiong & Co., Aurora, Ill., for Ill., Iowa, Wis., Minn., Neb., Kan., and Mo.

MILL MANUFACTORY
ESTABLISHED 1851.
Grist Mills of French Buhr Stone.



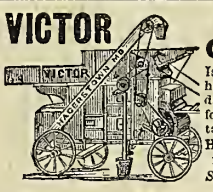
Portable Mills for Farmers, Saw Mills, etc. **18 Sizes and Styles. Over 2,000 in use.** $80 and upwards. Complete Mill and Sheller $95. A boy can grind and keep in order. Adapted to any kind of suitable power. Complete Flouring and Corn Mill. **ALL SIZES.** Send for Circular No. 28. **NORDYKE & MARMON CO.,**
Indianapolis, Ind.

EMPLOYMENT—LOCAL OR Traveling State which preferred. Also SALARY per month. All EXPENSES advanced. WAGES promptly paid. SLOAN & Co. 306 George St. Cincinnati, O.

Hardy Perennial Plants

Are increasing in popularity because they are **Hardy,** their roots living through the winter—and **Perennial,** appearing year after year in the same place. They include the most beautiful kinds that bloom all through the season, from earliest spring to latest fall.
Autumn is in many cases the best season for setting out these plants.
Send for free descriptive Catalogue of the largest collection in the Country—including Hardy Climbers, Flowering Shrubs, Lilies, Phloxes, Ferns, etc. Also choice native plants.
WOOLSON & CO., Box 180, Passaic, N. J.

VICTOR Double Huller Clover Machine



Is the **only** Huller that has ever hulled **100** bushels of seed in one day from *damp and wet straw.* Send for *Descriptive Circular,* which contains many letters confirming this.
Hagerstown Agricultural Implement Mfg. Co., Hagerstown, Md.
State where you saw Advertisement.

Farmers' Report
ON
CLOVER HULLERS.

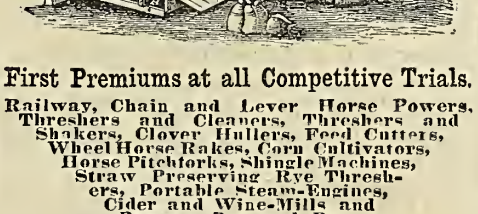
LAGRANGE, La Grange Co., Ind., May 27, 1880.
Report of a Joint Committee appointed by the Agricultural Societies of St. Joseph County, Michigan, and La Grange County, Indiana, to test the relative merits of the VICTOR CLOVER HULLER, OF HAGERSTOWN, MARYLAND, and of the BIRDSELL MONITOR, JUNIOR, CLOVER HULLER, OF SOUTH BEND, INDIANA:
WHEREAS, at the St. Joseph County, Michigan, Fair, held at Centreville, on the 21st day of May, 1880, an agreement was entered into by the representatives of the different machines to have a trial of their merits at the LaGrange County Fair on Thursday, May 27, a Joint Committee was formed, consisting of five from each of the two counties, and held such trial this day.
The Committee, in pursuance of the agreement, secured two two-horse-loads of clover, which had been stacked two winters, and brought them on the grounds, and determined that each machine should thresh one load, and then each RETHRESH the straw which had been run through the other machine according to agreement.
At the conclusion of the trial the Committee repaired to Agricultural Hall, and, after due deliberation, unanimously decided in favor of the **Victor for rapidity and excellency of work in all respects.**
The Birdsell, from 1,339 pounds straw, threshed 37 pounds seed mixed with a large quantity of chaff; the Victor, from 1,210 pounds straw, threshed 48½ pounds seed mixed with a less quantity of chaff. The time occupied in threshing by the Victor was eight minutes less than that occupied by the Birdsell. From the straw of the Victor the Birdsell machine rethreshed two pounds seed; from the straw of the Birdsell the Victor rethreshed eight pounds of seed. The time occupied by the Victor in this rethreshing was seven minutes less than that occupied by the Birdsell.
These machines were both run by a Russell engine, from Massilon, Ohio, in charge of John F. Fallon; used essentially the same amount of power.

Signed by Committee.
E. SIXBY, Chairman, LaGrange, Ind.
J. H. GARDNER, Sec'y, Centreville, Micb.
JAMES RICHARDS, Centreville, Mich.
MORDEN SABIN, Centreville, Mich.
SAMUEL FRANKISH, Centreville, Mich.
CHARLES FRANKISH, Centreville, Mich.
L. M. WOODWORTH, LaGrange, Indiana.
JAMES CLUGSTON, LaGrange, Indiana.
ARAD LAMPMAN, LaGrange, Indiana.
J. E. HOUK, LaGrange Indiana.

Circulars of the **Victor** sent postage prepaid on application.

Hagerstown Agl. Imp. Manf. Co.,
HAGERSTOWN, Md.

MEDAL MACHINES.
New York State Agricultural Works.



First Premiums at all Competitive Trials.
Railway, Chain and Lever Horse Powers, Threshers and Cleaners, Threshers and Shakers, Clover Hullers, Feed Cutters, Wheel Horse Rakes, Corn Cultivators, Horse Pitchforks, Shingle Machines, Straw Preserving Rye Threshers, Portable Steam-Engines, Cider and Wine-Mills and Presses, Dog and Pony Powers, etc., etc.

WHEELER & MELICK CO.,
ALBANY, N. Y.

Send stamp for circular and report of Centennial trial.

CIDER Can be kept for years **SWEET**
As when pressed by using **"Cook's Cider Preservative"** it absolutely prevents fermentation; is simple, cheap, and healthful; far ahead of any other process; convincing testimony sent to the doubting. Package for 3 bbls., 50 cts.; for 7 bbls., $1, with full directions for use by mail, prepaid.
Address FRANK FORD, Ravenna, Ohio.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from Page 339.

In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations are seldom repeated, as those who desire information on a particular subject can cheaply obtain one or more of the back numbers containing what is wanted.

Back numbers of the "American Agriculturist," containing articles referred to in the "Basket" or elsewhere, can always be supplied and sent post-paid for 15 cts. each, or $1.50 per volume.

The German Edition.—All the principal articles and engravings that appear in the *American Agriculturist* are reproduced in the German Edition. Besides these, there is a special department, edited by an eminent German cultivator. Our friends can do us a good service by calling the attention of their German neighbors and friends to the fact that they can have the paper in their own language, and those who employ Germans will find this Journal a most useful and acceptable present.

Bound Copies of volume 38, and of every previous volume back to Vol. XVI. (1857), neatly bound, with gilt backs, Index, etc., are supplied at $2 each (or $2.30 if to be sent by mail). See Publishers' Notes, 2d cover page.

Clubs can at any time be increased by remitting for each addition, the price paid by the original members; or a small club may be made a larger one at reduced rates, thus: One having sent 6 subscribers and $7, may afterwards send 4 names more and $3, making 10 subscribers for $10.00; and so for the various other club rates.

Terms to New South Wales, New Zealand, Australia, Africa, etc.—To several inquirers. Under the latest revision of the Postal Union Regulations the price of the *American Agriculturist* (either English or German edition), including postage *prepaid* through, will be covered by 7 shillings sterling per annum. This applies to the above countries, and to all others embraced in the General Postal Union. The simplest mode of remittance is by Postal Money Orders, payable in London, to the order of Orange Judd Company. These can be readily cashed in N. Y. City at a slight discount, which the publishers will cheerfully pay. For Club rates, (postage included), see our second cover page, and reckon 22 cents to the shilling sterling.

"Smut Grass," Indian Drop-Seed Grass.—This grass, *Sporobolus Indicus,* and *Agrostis Indica* of the older works, appears to be common from North Carolina southward. The flowers are often ergotised, and as the fine spores blacken the hands, or whatever else comes in contact with them, it has received the popular name of "Smut Grass," and in some places is known as "Black-seeded Grass." If any of our friends have had experience with this as a pasture or lawn grass we shall be glad to hear from them in regard to it.

Chisel Handles are very apt to be spoiled by splitting down when improperly struck with the hammer or mallet. This trouble may be avoided by putting a piece of heavy leather around the upper end as a ferule, fastened in place by a few small tacks. When a mallet is used, the leather ring is better than an iron one, as the mallet is not beaten out of shape by the leather as it may be if there is an iron ring on the handle.

A Large Horse.—One of the largest horses ever seen in New York City, recently arrived from Ohio. He is 20 hands and one inch in hight and weighs 2,450 pounds. The animal is of "native" stock and is a dark bay, of fine proportions and appears in perfect health.

Are Lombardy Poplars Injurious?—"J. M. W.," Pontiac, Ill., asks if Lombardy Poplar will injure fruit trees and prevent them from bearing. Most decidedly, provided it is planted where its roots can extend and rob the fruit trees of the nourishment that their roots ought to take up. And so with any other tree.

Handsomer than Silver Plate.—Some quite novel ware recently attracted our attention, and we learned that it was a "Granite Tea Set," a new premium for 1881 with other articles, brought to the office to have engravings made for the Premium List. There were, be-

sides the usual pieces of a "Tea Set," a Coffee Pot, Water Pitcher, and Butter Dish, all of pleasing design, as may be seen by reference to the Premium List. What especially interested us, was the material of which these were made, which appears to mark a new step in the way of art manufactures. The basis of these wares is iron—good honest sheet iron—here we have utility; in design and finish we have elegance. The larger portion of the surface of the articles is covered with what is called "Perfection Granite Coating," which is really an enamel, or glaze, the material being applied and fused by intense heat to form a beautifully smooth surface. The term "Granite," chosen as a trade mark, hardly gives a correct idea of the appearance of the ware, which is more like that of the finer kinds of bluish marble than granite. This peculiar mottled surface is relieved by having bands of nickel plate, and the handles and various other parts are also in nickel. The "beauty" of silver-plated ware "is but skin deep," and that skin is often fearfully and wonderfully thin. The merest film of silver looks at first as well as honestly made plate, and the quality of such wares can only be judged when one knows who made them. But there is about this "Granite" ware an honest look that is very satisfying. Nickel does not pretend to be silver, being handsome enough in itself, and is not so dear that a good thick coating may not be applied. In fact the ware is a thing of itself, and is not open to the suspicion of trying to appear like silver or like anything that it is not. The manufacturers, Manning, Bowman & Co., New York, are to be congratulated upon this most satisfactory application of art and manufacturing skill to the common articles of household use.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our record kept daily during the year, show at a glance the transactions *for the month ending August 10th*, 1880, and for the corresponding period last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

Receipts.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 d's *this* m'th	407,000	7,864,000	5,878,000	63,000	2[illegible]9,000	926,000
24 d's *last* m'th	396,000	6,281,000	4,889,000	79,000	307,000	1,331,000
Sales.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 d's *this* m'th	419,000	25,166,000*	14,181,000*	239,000	—	2,283,000*
24 d's *last* m'th	412,000	23,956,000*	8,3[illegible]1,000*	138,000	—	2,504,000*

2. *Comparison with same period at this time last year.*

Receipts.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 days 1880..	407,000	7,864,000	5,878,000	63,000	219,000	626,000
27 days 1879..	402,000	3,696,000	4,931,000	313,000	315,000	1,293,000
Sales	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 days 1880..	419,000	25,196,000	14,181,000	239,009	—	2,283,000
27 days 1879..	461,000	9,384,000	8,116,000	456,000	—	1,451,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
Aug. 10, '80..	3,046,697	1,784,441	46,004	25,283	78,910	202,563
July 7, '80..	1,520,213	440,977	73,367	25,425	623,115	216,075
Aug. 9, '79..	1,683,000	1,313,000	99,650	45,100	351,400	160,000
Aug. 12, '78..	1,127,000	598,750	62,650	203,200	472,400	137,000

4. *Exports from New York, Jan. 1 to Aug. 9.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
'80.	2,511,000	37,109,000	30,146,000	958,000	271,000	307,000	221,000
'79.	1,814,000	28,135,000	21,412,000	2,607,000	106,000	369,000	241,000
'78.	1,508,000	27,101,200	18,239,900	2,564,900	1,515,150	2,086,000	306,100

Dealings in Stocks and Bonds have been free for the season of the year, and though values have fluctuated widely, the market has shown an upward tendency.... Money has been in liberal supply, at comparatively low figures, in the loan and discount line....Real Estate has been held with increasing confidence....A moderate degree of animation has been reported in the line of General Merchandise at variable prices, though closing, as a rule, stronger....Less inquiry has been noted for Cotton, which has declined slightly. Crop prospects are represented as very favorable....A moderate demand prevailed for Wool, prices of which tended to weakness and irregularity. Manufacturers have been buying with reserve....Hops have declined sharply on freer offerings and a restricted call for supplies. A few bales of the crop of 1880 have been received and placed to brewers within the range of 50c.@75c....More activity has been noted in Petroleum, which has been ruling higher, and Naval Stores have attracted rather more attention, closing more firmly....Tobacco has been quoted steady, on a moderate movement....In the Breadstuff line, transactions have been on an extensive scale, but at unsettled, and for grain generally much lower, figures. Wheat has been offered with more urgency, especially new crop Winter, leading to a severe break in values, which in turn served to quicken operations, partly on speculative account, and at the close sellers again had the advantage. Corn fell materially early in the month, but left off stronger on liberal dealings largely for export. Cable advices have been encouraging. Rye has been quiet at irregular rates. Oats have been in light stock and wanted, partly for contract purposes....Flour has been moderately active, closing in favor of buyers....Provisions have been more confidently dealt in, and have been quoted dearer, though unsettled....Ocean Grain freights have been less active, opening higher but closing lower including by steam to Liverpool, 8¼@8½*d.* per bushel; to Bristol, by steam, to 9*d.* per bushel; to Antwerp, by steam, to 8½@9*d.* per bushel, and sail to Cork, for orders for vessels of average carrying capacity—say 3,000 to 4,000 qrs.—6*s.* 1½*d.*@6*s.* 3*d.* per qr. of 480 lbs....The visible supplies of Wheat—embracing the hoards at lake ports, in transit, and on the seaboard—at latest dates, embraced about 14,272,000 bushels; of Corn, 16,739,600 bushels; of Rye, 271,900 bushels; of Barley, 176,200 bushels, and of Oats, 1,516,400 bushels, against on January 31, an aggregate of 30,100,000 bushels Wheat, 13,100,000 bushels Corn, 979,000 bushels Rye, 4,155,000 bushels Barley, and 3,080,000 bushels Oats.

CURRENT WHOLESALE PRICES.

	July 12.	Aug. 11.
Flour—Super to Extra State	$3 40 @ 4 60	$3 50 @ 4 50
" Super to Extra South'n.	3 40 @ 7 00	3 50 @ 6 75
" Extra Genesee	4 75 @ 6 00	4 60 @ 6 00
" Superfine Western	3 40 @ 4 15	3 50 @ 4 40
" Extra Western	4 15 @ 8 50	4 00 @ 8 50
" " Minnesota	4 25 @ 8 50	4 00 @ 8 50
Rye Flour, Superfine	4 50 @ 5 00	4 50 @ 5 05
Corn-Meal	2 50 @ 3 15	2 50 @ 3 25
Corn-Flour, ⅌ bbl	2 75 @ 3 25	2 75 @ 3 35
Oat-Meal, ⅌ bbl	4 50 @ 6 50	4 75 @ 6 25
Wheat—All kinds of White	1 10 @ 1 18½	98 @ 1 14
" Red and Amber	1 00 @ 1 27	90 @ 1 10
" Spring	1 00 @ 1 14	90 @ 1 09
Corn—Yellow	50 @ 51½	48½@ 63
" White	51 @ 54	51 @ 55
" Mixed	47 @ 50	45 @ 48¾
Oats	34 @ 44	36 @ 46
Rye	78 @ 83	78 @ 84
Barley	Nominal.	Nominal.
Hay—Bale, ⅌ 100 lbs	70 @ 1 10	70 @ 1 10
Straw, ⅌ 100 lbs	50 @ 1 10	45 @ 1 05
Cotton—Middlings, ⅌ lb	11⅞@ 12	11⅝@ 11⅞
Hops—Crop of 1880, ⅌ lb	— @ —	40 @ 75
" " 1879, ⅌ lb	25 @ 38	25 @ 33
" old, ⅌ lb	4 @ 15	4 @ 15
Feathers—Live Geese, ⅌ lb	45 @ 52½	35 @ 48
Seed—Clover, W. & St. ⅌ lb	7 @ 7¾	7¼@ 8¼
" Timothy, ⅌ bushel	Nominal.	2 65 @ 2 90
" Flax, ⅌ bushel	1 40 @ 1 45	1 33 @ 1 40
Tobacco, Kentucky, &c., ⅌ lb	3 @ 14	3 @ 14
" Seed Leaf, ⅌ lb	6 @ 40	6 @ 40
Wool—Domestic Fleece, ⅌ lb	24 @ 52	22 @ 50
" Domestic, pulled	22 @ 52	22 @ 50
" California	18 @ 35	15 @ 34
Tallow, ⅌ lb	6⅛@ 6¼	6⅜@ 6½
Oil-Cake—⅌ ton	32 00 @32 50	30 50 @ —
Pork—Mess, ⅌ bbl	13 00 @13 50	14 25 @14 50
" Extra Prime, ⅌ bbl	Nominal.	11 00 @12 00
Beef—Extra Mess	10 00 @ —	10 00 @11 00
Lard, in tres. & bbls, ⅌ 100 lb	7 05 @ 7 67½	7 50 @ 8 12½
Butter—State, ⅌ lb	16 @ 23	18 @ 27
" Western, poor to f'cy, lb	12 @ 23	15 @ 27
Cheese	7 @ 9¼	9 @ 12
Eggs—Fresh, ⅌ dozen	12½@ 14½	12 @ 14½
Poultry—Fowls, ⅌ lb	10 @ 15	10 @ 13
" Chickens, ⅌ lb	16 @ 25	11 @ 20
" " ⅌ pair	— @ —	— @ —
" Roosters, ⅌ ½	6 @ 7	5 @ 8
" Capons, ⅌ lb	— @ —	— @ —
" Turkeys, ⅌ lb	10 @ 13	11 @ 14
" Geese, ⅌ pair	1 12½@ 1 62½	1 12½@ 1 62½
" Geese, ⅌ lb	— @ —	— @ —
" Ducks, ⅌ pair	45 @ 60	45 @ 55
" " ⅌ lb	15 @ 20	— @ —
Pigeons, ⅌ dozen	70 @ 2 00	75 @ 2 00
Snipe, ⅌ dozen	1 75 @ 2 00	— @ —
Woodcock, ⅌ pair	— @ —	75 @ 80
Peaches, ⅌ crate	75 @ 4 00	65 @ 1 75
Plums, ⅌ quart	5 @ 7	4 @ 7
" ⅌ bbl	— @ —	4 50 @ 6 00
Apples, ⅌ barrel	1 25 @ 3 50	25 @ 1 75
" ⅌ crate	75 @ 2 00	— @ —
Pears, ⅌ barrel	— @ —	1 00 @ 7 00
Gooseberries, ⅌ bushel	1 25 @ 1 50	— @ —
Cherries, ⅌ lb	4 @ 12	— @ —
Currants, ⅌ lb	4 @ 8	— @ —
Whortleberries, ⅌ hf bush	2 50 @ 3 50	1 25 @ 2 25
Blackberries, ⅌ quart	5 @ 10	3½@ 10
Raspberries, ⅌ cup	3 @ 7	— @ —
Grapes, ⅌ case	— @ —	2 50 @ 5 00
Potatoes, new, ⅌ bbl	50 @ 3 25	75 @ 2 25
" Sweet, ⅌ bbl	— @ —	1 50 @ 2 50
Tomatoes, ⅌ box	1 00 @ 4 50	60 @ 75
Turnips, ⅌ bbl	— @ —	75 @ 1 25
" white, new, ⅌ 100 bun	2 00 @ 4 00	2 50 @ 4 00
Beans, ⅌ bushel	1 25 @ 1 80	1 25 @ 2 25
Egg Plants, ⅌ crate	1 25 @ 2 00	1 75 @ 2 50
Peas—Canada, in bond, ⅌ bu	— @ 85	— @ —
" new, green, ⅌ bag	2 00 @ 3 50	1 50 @ 2 50
" new, ⅌ bbl	— @ —	— @ —
Corn, green, ⅌ 100	50 @ 1 25	50 @ 1 50
String Beans, new, ⅌ crate	— @ —	— @ —
" " ⅌ bag	2 00 @ 2 75	50 @ 1 25
Carrots, ⅌ 100 bunches	— @ —	1 00 @ 1 50
Beets, ⅌ 100 bunches	1 50 @ 3 00	— @ —
Cabbages, new, ⅌ 100	4 00 @10 00	3 00 @ 8 00
Onions, ⅌ bbl	4 00 @ 5 00	4 00 @ 5 50
Squash, ⅌ bbl	1 25 @ 2 25	75 @ —
" ⅌ crate	— @ —	— @ —
Watermelons, ⅌ 100	10 00 @35 00	5 00 @18 00
Radishes, new, ⅌ 100 bunch.	50 @ 1 50	50 @ 87½
Cucumbers, ⅌ 100	50 @ 1 50	25 @ 60
Lettuce, ⅌ bbl	1 75 @ 3 00	1 00 @ 2 25
Cauliflower, ⅌ dozen	1 00 @ 4 00	75 @ 4 00

New York Live-Stock Markets.

RECEIPTS.

Week Ending	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
July 12	1[illegible],685	137	4,469	39,162	24,833
July 19	13,480	89	4,600	28,955	20,596
July 26	14,045	72	4,527	36,365	24,609
Aug. 2	14,528	102	4,669	38,012	20,831
Aug. 9	13,487	83	6,834	41,929	28,250
Total for 5 Weeks	71,225	483	25,108	184,4[illegible]3	119,099
do. for prev. 4 Weeks	66,655	349	21,085	139,066	108,384

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per week	14,245	97	5,022	36,885	23,814
do. do. *last Month*	14,164	87	5,271	34,766	27,096
do. do. *prev's Month*	15,436	87	6,278	35,659	31,574

Prices for beeves the past five weeks were as follows:

Week Ending	*Range.*	*Larger Sales.*	*Aver.*
July 12	6¾@10 c.	8½@ 9¼c.	9 c.
July 19	7½@10¼c.	8¾@ 9¼c.	9¼c.
July 26	7½@10¼c.	9 @ 9¾c.	9⅜c.
Aug. 2	7¼@10¼c.	8¾@ 9½c.	9¼c.
Aug. 9	6 @10¼c.	8½@ 9½c.	9 c.

Beeves.—The month closed with a dull and discouraging cattle trade. There was a falling off of over a thousand head in the last week. The export trade is not what it was at the beginning of the month, when the receipts were heavy and the market active. Corn fed Colorados brought 8¾@9c. and as high as 10¼c. was paid for extra selected Illinois steers to dress 57 pounds.... **Cows.**—There is a very light demand for milch cows, and the arrivals, though small, are all that are wanted. State cows sold for from $30 to $50....**Calves.**—The market for veals has been fair. Grassers and Buttermilk calves sold at 2@2½c., and a few select lots at 8c. Fed calves were at 3@3½c....**Sheep and Lambs.**—As usual at this time of year, prime stock has been in demand at good prices, while common stock has been hard to dispose of at low prices. Poor to fair sheep sold at 3½@4¼c., and Prime at 4½@5¾c., and a few select at 6c.... **Swine.**—Market active at the close of the month. Common grassers sold at $4.25@$4.50. Fair to good Michigans and Ohios $3.55@$3.85. Corn fed Yorkers $4 90@$5.05.

The Horse Market.—The receipts of horses have been very light and this is fortunate as the demand is small. The present supply is mostly common light horses which sell for $100@$140 per head. A number of importations of valuable blooded horses have been made, mostly of the Norman Percheron and Clydesdale breeds. These heavy horses will mostly go to the Western States.

Prices of Feed.

Cotton-seed meal	per ton,	$30.00
Linseed-cake meal	"	37.00
Middlings	"	24 00
Bran	"	23.00
Corn-meal	"	28.00

Prices of Fertilizers.

Nitrate of Potash (95 per cent), per lb	8 @8½c.
Sulphate of Potash (potash 44 per cent), per lb	3¼@4 c.
do. do. (potash 27½ per cent, per lb	1½@1¾c.
German Potash Salts (potash 12 to 15 p. c.), p. ton	$14.00@16.00
Muriate of Potash (potash 50 per cent), per lb	2 @2¼c.
Nitrate of Soda, per lb	5 @5¼c.
Sulphate of Ammonia (25 per cent), per lb	4 @4¼c.
Dried Blood (ammonia 13 per cent), per ton	$40.00@45.00
No. 1 Peruv. Guano, 9 p. c. ammonia, standard, ⅌ ton	$55.00
do. do. Lobos, do. do, ⅌ ton	46.00
do. do. guaranteed, ⅌ ton, cargo K	56.00
Soluble Pacific Guano, per ton	45.00
Excelsior Fertilizer Works, Fine Ground Raw Bone	55.00
Mapes' Complete Manure (clay soils), per 1,000 lbs	25.50
do. do. do. (light soils, per 1,000 lbs	25.50
do. do. do. "A" Brand (wheat), ⅌ 1,000 lbs.	20.00
do. Tobacco do. do.	62.00
do. Fruit and Vine Manure, per ton	37.00
do. Asparagus Manure, per ton	51.00
Homestead Superphosphate, per ton	40.00
do. Tobacco Grower, per ton	60.00
Banner Raw Bone Flour, per ton	45.00
Stockbridge Rye Manure, per ton	45.00
do. Wheat Manure, per ton	45.00
do. Seeding Down Manure, per ton	40.00
Bowker's Wheat Phosphate, per ton	40.00
Walton, Whann & Co.'s Raw Bone Phosphate, per ton.	40.00
Gypsum, Nova Scotia, ground, per ton	8.00

Long Ladders are the most easily moved to any considerable distance upon the farm by strapping them upon a wheelbarrow, the rear end being used as the handles, by means of which the whole is trundled along. The entire ladder is before the person, and there is no danger of doing any injury to surrounding objects, as is the case when carried upon the shoulder.

A Deaf Shepherd Dog.—"L. B. M.," Tecumseh, Neb., has a dog which occasionally has a gathering in, and matter comes from, his ear; at such times he is deaf and unable to work, while he is all right at other times. The trouble seems to be what is known as Internal Canker of the Ear, or, as physicians term it, *Otorrhœa.* Warm fomentations would be of benefit, and attention should be given to feeding at regular intervals, a moderate allowance of wholesome food. Pour into the ear once a day, a teaspoonful of lotion made of half a dram of Sugar of Lead, and one dram of Tincture of Arnica, in half a pint of water.

Good Shooting.—The victory of the American team at Dollymount, with a score of 1,292 against 1,280 for the Irish competitors shows that rifle shooting is getting to be a very skilful practice. Of the 450 shots fired at the 800, 900, and 1000 yard ranges, but a single one would have missed a man, had he stood in place of the target. To seldom miss a man at over half a mile certainly might be made very dangerous shooting.

The Chinese Yam.—"S. K." This is perfectly hardy, and is worth growing as an ornamental climber; its leaves are of a fine dark green, and its flowers, though minute and not showy, are pleasingly fragrant.

Lunch for the Team.—A Lunch at a fence corner, or from the end of the wagon box, under a tree, is much enjoyed by the team, and the time thus spent is not lost, but more than made up by the freshness with which the animals go to their work again. There are many times when the team of oxen or horses must stop work, and wait while some other matter is being attended to by the driver, and a half hour, or less, spent at lunch, will go far to keep the working stock in good condition through the season of heat and hard work. The same may be said of occasional light drinks if the water is not too much out of the way to allow them to be given.

State, County, and Other Fairs in 1880.

STATE FAIRS.

Alabama	Montgomery	Nov. 8-13
Arkansas	Little Rock	Oct. 18-23
California	Sacramento	Sept. 20-25
Connecticut	Meriden	Sept. 21-24
Delaware	Dover	Sept. 27-Oct. 2
Georgia	Atlanta	Oct. 18-23
Illinois	Springfield	Sept. 27-Oct. 2
Indiana	Indianapolis	Sept. 27-Oct. 2
Iowa	Des Moines	Sept. 6-10
Kansas	Topeka	Sept. 13-18
Kentucky	Louisville	Aug. 30-Sept. 4
Maine	Lewiston	Sept. 21-24
Michigan	Detroit	Sept. 13-17
Minnesota	Minneapolis	Sept. 6-11
Montana	Helena	Sept. 6-11
Nebraska	Omaha	Sept. 20-26
New Jersey	Waverley	Sept. 20-26
New York	Albany	Sept. 13-17
Ohio	Columbus	Aug. 30-Sept. 3
Oregon	Salem	——
Pennsylvania	Philadelphia	Sept. 6-18
Rhode Island	Cranston	Sept. 21-23
South Carolina	Columbia	Nov. 9-12
Texas	Austin	Oct. 19-23
Vermont	Montpelier	Sept. 14-17
Virginia	Richmond	Oct. 22-29
Wisconsin	Madison	Sept. 6-10

Industrial and District Fairs.

Am. Institute	New York	Sept. 15-Nov. 27
Canada, Central	Guelph	Sept. 21-22
Chicago	Chicago	Sept. 8-Oct. 3
Cincinnati Ind. Ex	Cincinnati	Sept. 8-Oct. 9
Illinois Fat Stock	Chicago	Nov. 15-20
Indiana Northern	Ft. Wayne	Sept. 6-0
Ind. N.E. & O. N.W.	Hicksville	Sept. 21-24
Indiana, N. Eas'n.	Waterloo	Oct. 4- 8
Kentucky	Lexington	Aug. 31-Sep. 4
Kentucky, North	Florence	Aug. 31-Sep. 4
Massachusetts	Boston	Sept. 14-17
Minnesota A. & M.	Minncapolis	Sept. 6-11
Montana	Helena	Sept. 6-11
National	Washington, D.C.	Oct. 4- 9
New England	Worcester, Mass.	Sept. 6- 9
N. Y. Western	Rochester	Sep. 29-Oct. 1
Ohio Central	Mechanicsburg	Aug. 24-27
Ohio Northern	Cleveland	Sept. 6-11
Ohio	Columbus	Aug 30-Sep. 3
Ohio Southern	Dayton	Sept. 13-18
Ontario, Provincal.	Hamilton	Sep. 20-Oct. 4
St. Louis	St. Louis	Oct. 4- 9
Tri-State	Toledo, O.	Sept. 13-18

MAINE.

Somerset, West'n	North Anson	Sept. 29-30

NEW HAMPSHIRE.

Beiknap	Laconia	Sept. 21-23
Cheshire	Keene	Oct. 5- 6
Lempster	East Lempster	Oct. 6
Marlow	Marlow	Sept. 30-Oct. 1
Newport	Newport	Oct. 6
Waipole	Walpole	Sept. 21-23

VERMONT.

Battenkill Valley	Factory Point	Sept. 29-30
Caledonian	St. Johnsbury	Sept. 21-23
Franklin	Sheldon	Sept. 22-24
Lamoille	Morrisville	Sept. 8- 9
Orange	Bradford	Sept. 28-30
Orleans	Barton	Sept. 28-30
Orwell Far. Club	Orwell	Sept. 21-22
Rutland	Rutland	Sept. 8-10
Windsor & Win'm	Perkinsville	Sept. 16-17
Wilmington	Wilmington	Oct. 6
White River	Bethel	Sept. 21-23

MASSACHUSETTS.

Barnstsbie	Barnstable	Sept. 28-29
Berkshire	Pittsfield	Oct. 5- 7
Bristol	Taunton	Sept. 28-30
Deerfield Valley	Charlemont	Sept 23-24
Essex	Lynn	Sept. 28-29
Franklin	Greenfield	Sept. 30-Oct. 1
Hampshire, Frank-lin & Hampden	Northampton	Oct. 6- 8
Hampshire	Amherst	Sept. 23-24
Hampden	Springfield	Sept. 28-30
Hampden, East	Palmer	Sept. 21-22
Hanson Far. Club	Hanson	Sept. 28-29
Highland	Middlefield	Sept. 16-17
Hingham	Hingham	Sept. 14-15
Housatonic	G't Barrington	Sep. 29-O. 1
Hoosac Valley	North Adams	Sept. 21-22
Leominster F. Club	Leominster	Sept. 23
Marshfield	Marshfield	Sept. 15-17
Martha's Viney'd. W.	Tisbury	Oct. 5- 6
Middlesex	Concord	Sep. 29-Oct. 2
Middlesex, North.	Lowell	Sept. 28-29
Middlesex, South.	Framingham	Sept. 21-22
Nantucket	Nantucket	Sept. 8- 9
Plymouth	Bridgewater	Sept. 2 - 4
Union	Blandford	Sept. 22-24
Westboro F. Club	Westboro	Sept. 23
Worcester	Worcester	Sept. 7-10
Worcester, North	Fitchburg	Sept. 28-29
Worcester, N. W.	Athol	Oct. 5- 6
Worcester, South.	Sturbridge	Sept. 16-17
Worcester, S. E.	Milford	Sept. 28-30
Worcester, West.	Barre	Sept. 30-Oct. 1

RHODE ISLAND.

Aquidneck	Newport	Sept. 21-23
Washington	West Kingston	Sept. 14-16
Woousocket	Woousocket	Sept. 14 16

CONNECTICUT.

Danbury	Danbury	Oct. 5- 9
Fairfie d	Norwalk	Sept. 14-17
Guilford	Guilford	Sept. 28
Hartford	Hartford	Sept. 28-Oct. 1
Killingworth	Killingworth	Oct. 6
Milford & Orange	Milford	Sept. 8- 9
New Lond n	Norwich	Sept. 28-30
New Milford	New Milford	Sept. 30-Oct. 1
New Haven	Oxford	Sept. 28
Ridgefield	Ridgefield	Sept. 21-24
Union	Falls Village	Sept. 14-16
Union	Huntington	Sept. 23-24
Watertown	Watertown	Sept. 28-30
Windham	Brooklyn	Sept. 21-23
Woodstock	Woodstock	Sept. 14-16

NEW YORK.

Alleghany	Angelica	Sept. 28-30
Broome	Whitney's Point	Sept. 7-10
Cattaraugus	Little Valley	Sept. 14-16
Cayuga	Auburn	Oct. 5- 6
Chautauqua	Jamestown	Sept. 21-23
Chemung	Elmira	Sept. 22-25
Chenango	Norwich	Sept. 8-10
Columbia	Chatham Village	Sept. 21-23
Columbia	Hudson	Sept. 14-15
Delaware	Delhi	Sept. 28-30
Duchess	Washington Hol.	Sept. 21-24
Erie	Hamburg	Sept. 21-24
Essex	Westport	Sept. 14-16
Franklin	Malone	Sept. 28-30
Fulton	Johnstown	Sept. 7- 9
Genesee	Batavia	Sept. 21-24
Greene	Cairo	Sept. 22-23
Herkimer	Herkimer	Sept. 14-16
Jefferson	Watertown	Sept. 21-23
Lewis	Lowville	Sept. 14-17
Montgomery	Fonda	Sept. 21-23
Niagara	Lockport	Sept. 23-25
Oneida	Rome	Sept. 20-24
Onondaga	Syracuse	Sept. 7-24
Ontario	Canandaigua	Sept. 28-30
Orange	Warwick	Sept. 22-24
Orleans	Albion	Sept. 24-25
Otsego	Cooperstown	Sept. 27-29
Oswego	Mexico	Sept. 7- 9
Queens	Mineola	Sept. 28-30
Rockland	Spring Valley	Sept. 28-30
St. Lawrence	Canton	Sept. 13-16
Saratoga	Saratoga	Sept. 7-12
Schenectady	Schenectady	Sept. 21-23
Schoharie	Schoharie	Sept. 21-23
Schuyler	Watkins	Sep. 29 Oct. 1
Steuben	Bath	Sep. 28 Oct. 1
Suffolk	Riverhead	Oct. 5- 7
Sullivan	Monticello	Sept. 29-30
Tioga	Owego	Sept. 28-30
Tompkins	Ithaca	Sept. 15-17
Washington	Sandy Hill	Sept. 7-10
Wyoming	Warsaw	Sept. 7- 9
Yates	Penn Yan	Oct. 5- 9

NEW JERSEY.

Burlington	Mt. Holly	Oct. 12-15
Cape May	So. Seaville	Sept. 16-17
Cumberland	Bridgeton	Sept. 22
Delaware Valley	Lambertville	Sept. 14-17
Egg Harbor City	E. H. City	Sept. 13-14
Hunterdon	Flemington	Sept. 28-30
Monmouth	Freehold	Sept. 14-16
Moorestown	Moorestown	Sept. 14-15
Somerset	Somerville	Oct. 5- 8
Warren	Belvidere	Sept. 5- 8
West Jersey	Woodstown	Sept. 15-16

PENNSYLVANIA.

Bedford	Bedford	Oct. 5- 8
Beaver	Beaver	Sept. 14-17
Berks	Reading	Sept. 28 Oct. 1
Blair	Altoona	Sept. 28-Oct. 1
Bradford	East Towanda	Sep. 29-Oct 1
Bucks	Doylestown	Oct. 5- 8
Butler	Butler	Sept. 21-23
Burgettstown	Burgettstown	Oct. 5- 7
Carbon	Lehighton	Oct. 12-15
Chester	West Chester	Sept. 23-26
Clarion	Clarion	Sept. 14-16
Connoquen'g Val.	Harmony	Sept. 28-30
Crawford	Conneautville	Sep. 29-Oct. 1
Cumberland	Carlisle	Sep. 25 Oct. 1
Dauphin	Harrisburg	Sept. 21-24
Delaware	Greenw'd Sta.	Sep. 30 Oct. 2
Farm. & Mech. Ins.	Easton	Sept. 21-24
Erie	Erie	Sept. 14 17
Franklin	Chambersburg	Oct. 5- 8
French Creek	Cochrantown	Sept. 14-16
Gratz	Gratz	Sept. 21-24
Greene	Carmichaels	Oct. 14-15
Keystone, Bucks Co.	Kutztown	Sept. 21-24
Lancaster	Lancaster	Sep. 29-Oct. 1
Lawrence	Newcastle	Sept. 14-17
Lehigh	Allentown	Sept. 28-Oct. 1
Lycoming	Williamsport	Sept. 2 -24
Lycoming & Clin.	Jersey Shore	Sep. 29-Oct 2
Mercer	Stoneboro	Oct. 5- 7
Mifflin	Lewistown	Oct. 6- 8
Montgomery	Ambler Park	Sept. 21-24
Oil Creek Valley	Titusville	Sept. 2 -24
Oxford	Oxford	Sep. 29-Oct. 1
Ringtown	Ringtown	Sept. 14-17
Riverside Park	Mifflintown	Sept. 22-24
Schuylkill	Orwigsburg	Sept. 21-24
Susquehanna	Montrose	Sept. 15-16
Troy	Troy	Oct. 6- 8
Union	Burgettstown	Oct. 5 7
Union	Lewisburg	Oct. 6 8
Warren	Sugar Grove	Sept. 14-16
Washington	Washington	Oct. 5- 7
Western Penn'a.	Mercer	Sept. 7- 9
Westmoreland	Greensburg	Sep. 28 Oct. 1
York	York	Oct. 5- 8
York Hor'l & Ind'l	York	Sept. 15-17

MARYLAND.

Baltimore	Timonium	Sept. 7-10
Caroline	Bethlehem	Sept. 14-16
Frederick	Frederick	Oct. 12- 4
Kent	Chestertown	Sept. 14-16
Montgomery	Rockville	Sept. 8-10

DELAWARE.

Kent	Dover	Sep. 27-Oct. 3
Peninsula	Middletown	Sept. 21-24

OHIO.

Allen	Lima	Sept. 28-Oct. 1
Ashtabula	Jefferson	Sept. 22-24
Athens	Athens	Oct. 6- 8
Auglaize	Wapakoneta	Oct. 5- 8
Belmont	St. Clairsville	Sept. 15 17
Brown	Georgetown	Oct. 5- 8
Butler	Hamilton	Oct. 4- 8
Carroll	Carrollton	Oct. 5- 7
Champaign	Urbana	Sept. 7-10
Clarke	Springfield	Aug. 17-20
Clermont	Boston	Sept. 7- 0
Clinton	Wilmington	Sept. 7-10
Columbiana	New-Lisbon	Sept. 14- 6
Coshocton	Coshocton	Sept. 21-25
Crawford	Bucyrus	Sept. 28-Oct. 1
Cuyahoga	Chagrin Falls	Sept. 22-24
Darke	Greenville	Sept. 21-24
Defiance	Defiance	Sept. 27-Oc. 1
Delaware	Delaware	Sept. 22-24
Erie	Sandusky	Sept. 21-24
Fairfield	Lancaster	Oct. 13-16
Fulton	Tedrow	Oct. 6- 8
Gallia	Gallipolis	Sept. 8-11
Geauga	Burton	Sept. 15-18
Greene	Xenia	Sept. 14 16
Hamilton	Carthage	Aug. 23-27
Hancock	Findlay	Sept. 9-Oct. 2
Hardin	Kenton	Oct. 6- 9
Harrison	Cadiz	Oct. 5- 7
Highland	Hillsboro	Oct. 13-15
Hocking	Logan	Oct. 7- 9
Holmes	Millersburg	Sept. 21-24
Jackson	Jackson C. H.	Sept. 1 -19
Jefferson	Smithfield	Sept. 22-24
Knox	Mt. Vernon	Oct. 5- 8
Lake	Painesville	Sept. 22-24
Lawrence	Ironton	Sept 14-17
Licking	Newark	Sept. 28 Oct. 1
Logan	Bellefontaine	Sep. 28-Oct. 1
Lorain	Elyria	Sept. 14-16
Mahoning	Canfield	Oct. 5- 8
Marion	Marion	Oct. 5- 8
Medina	Medina	Sept. 14-16
Meigs	Pomeroy	Sept. 15-17
Mercer	Celina	Sept. 15-18
Miami	Troy	Oct. 5- 8
Morgan	McConnelsville	Sept. 21-24
Morrow	Mt. Gilead	Sept. 2 -24
Muskingum	Zanesville	Sept. 7-10
Ottawa	Port Clinton	Oct. 6- 8
Paulding	Paulding	Sept. 9-Oct. 1
Perry	New Lexing'n	Sep. 28-Oct. 1
Pickaway	Circleville	Sept. 28 Oct. 1
Portage	Ravenna	Sept. 21-24
Preble	Eaton	Sept. 28-Oct. 1
Putnam	Ottawa	Oct. 6- 9
Richland	Mansfield	Sep. 29-Oct. 1
Ross	Chillicothe	Aug. 10- 3
Sandusky	Fremont	Sept. 28-Oct. 1
Seneca	Tiffin	Sept. 28-Oct. 1
Shelby	Sidney	Sept. 28-Oct. 2
Stark	Canton	Sept. 28 Oct. 1
Summit	Akron	Oct. 5- 7
Trumbull	Warren	Sept. 14-17
Tuscarawas	Canal Dover	Sept. 28-Oct. 1
Union	Marysville	Sept. 28 Oct. 1
Van Wert	Van Wert	Sept. 30-Oct. 2
Warren	Lebanon	Sept 21-24
Washington	Marietta	Sept. 29-Oct. 1
Wayne	Wooster	Oct. 6- 8
Wood	Tontogany	Sept. 28-Oct. 1
Wyandot	Up. Sandusky	Oct. 12-15

INDIANA.

Allen	Fort Wayne	Sept. 6- 9
Blackford	Hartford City	Sept. 21 24
Boone	Lebanon	Sept. 6-10
Bartholomew	Columbus	Aug. 31-Sep. 4
Carroll	Delphi	Sept. ——
Clay	Brazil	Aug. 16-21
Clinton	Frankfort	Aug. 23-27
Daviess	Washington	Sept. 28-Oct. 2
Elkhart	Goshen	Sept. 28-Oct. 1
Fayette (E. Ind.)	Connersville	Sept. 7-10
Franklin	Brookville	Sept. 21 24
Fulton	Rochester	Sept. 15-18
Grant	Marion	Sept. 14-18
Gibson	Princeton	Sept. 20-24
Greene	Linton	Oct. 4- 8
Harrison	Corydon	Sept. 13 17
Hamilton	Cicero	Aug. 24-27
Hendricks	Danville	Sept. 14
Henry	New Castle	Sept. 21-24
Howard	Kokom	Sept. 13-16
Huntington	Huntington	Sept. 15-18
Jackson	Brownstown	Aug. 2 -27
Jay	Portland	Oct. 5- 8
Jefferson	Madison	Aug. 24-28
Jennings	North Vernon	——
Johnson	Franklin	Sept. 14-18
Knox	Vincennes	Oct. 11-16
La Grange	La Grange	Sept. 22-24
Lake	Crown Polut	Sept. 14-17
La Porte	La Porte	Sept. 29-Oct. 1
Lawrence	Bedford	Sept. 15-18
Madison	Anderson	Sept. 7-12
Miami (Peru Dr. Pk.)	Peru	Sept. 14-18
Monroe	Bloomington	Sept. 21-25
Montgomery	Crawfordsville	Sept. 6-11
Morgan	Martinsville	Oct. 5- 9
Noble	Ligonier	Oct. 6- 9
Orange	Paoli	Sept. 21-25
Perry	Rome	Oct. 4- 8
Pike	Petersburg	Sept. 6-10
Porter	Valparaiso	Sept. 29-Oct. 1
Posey	New Harmony	Sept. 14-17
Pulaski	Winamac	Sept. 21-24
Putnam	Greencastle	Sept. 6-12
Randolph	Winchester	Sept. 15-18
Ripley	Osgood	Aug. 17-20
Rush	Rushville	Sept. 14-17
Shelby	Shelbyville	Sept. 7-11
Stark	Knox	Oct. 4
Steuben	Angola	Sept. 28-Oct. 1
Tippacsnoe	Lafayette	Aug. 30-Sept. 4
Tipton	Tipton	Sept. 21-24
Vigo	Terre Haute	Sept. 14 18
Wabash	Wabash	Sept. 7-10
Warren	West Lebanon	Sept. 6-11
Warrick	Booneville	Oct. 12-16

ILLINOIS.

Adams	Camp Polut	Aug. 30-Sep. 3
Boone	Belvidere	Sept. 7-10
Brown	Mt. Sterling	Aug. 24-27
Bureau	Princeton	Sept. 13-16
Carroll	Mt. Carroll	Sept. 28-Oct. 1
Cass	Virginia	Aug. 17-20
Champaign	Champaign	Sept. 21-24
Clark	Marshall	Sept. 22-24
Clay	Flora	Sept. 28-Oct. 2
Coles	Charleston	Sept. 7-11
Crawford	Robinson	Sept. 8 Oct. 1
Cumberland	Prairie City	Sept. 29-Oct. 2
DeKalb	Sycamore	Sept. 14-17
DeWitt	Clinton	Aug. 30-Sep. 3
Douglas	Tuscola	Sept. 14-18
DuPage	Wheaton	Sept. 8-10
Edgar	Paris	Aug. 31-Sep. 3
Edwards	Albion	Sept. 28-Oct. 1
Fayette	Vandalia	Sept. 29-Oct. 1
Ford	Paxton	Aug. 31-Sept. 3
Franklin	Benton	Sept. 28-Oct. 1
Fulton	Canton	Oct. 4- 8
Fulton	Avon	Sept. 28-Oct. 1
Gallatin	Shawneetown	Oct. 5- 8
Greene	Carrollton	Oct. 19-22
Hardin	Elizabethtown	Sept. 22-25
Henderson	Biggsville	Sept. 14-17
Henry	Cambridge	Aug. 30-Sept. 3
Iroquois	Onarga	Sept. 7-10
Jackson	Murphysboro	Sept. 21 24
Jasper	Newton	Sept. 21-24
Jefferson	Mt. Vernon	Oct. 12-15
Jersey	Jerseyville	Oct. 12-15
Jo Daviess	Galena	Sept 28-Oct. 1
Jo Daviess	Warren	Sept. 14-17
Kane	Elgin	Sept. 14-17
Kendall	Bristol	Sept. 6- 8
Knox	Knoxville	Sept. 13-17
Lake	Libertyville	Sept. 22-24
Lake	Waukegan	Sept. 7 Oct. 2
LaSalle	Ottawa	Sept. 6-10
Lawrence	Lawrenceville	Oct. 6- 9
Livingston	Fairbury	Sept. 6-10
Logan	Lincoln	Aug. 25-28
Logan	Atlanta	Sept. 7-10
Macon	Decatur	Sept. 21-25
Marion	Centralia	Sept. 21
Marshall	Wenona	Sept. 27-Oct. 1
Mason	Havana	Sept. 7-10
Massac	Metropolis	Oct. 13-16
McDonough	Macomb	Aug. 24-28
McHenry	Woodstock	Sept. 7-10
McHenry	Marengo	Sept. 14-17
McLean	Bloomington	Aug. 31-Sept. 3
Menard	Petersburg	Aug. 31-Sept. 3
Mercer	Aledo	Sept. 20-23
Morgan	Jacksonville	Aug. 23-27
Moultrie	Sullivan	Sept. 14-17
Ogle	Oregon	Sept. 21-24
Ogle	Rochelle	Sept. 6
Perry	Pickneyville	Oct. 5
Piatt	Monticello	Aug. 16-20
Pike	Pittsfield	Sept. 22-25
Randolph	Sparta	Sept. 29-Oct. 1
Randolph	Chester	Oct. 19-22
Richland	Olney	Sept. 14-18
Rock Island	Hill-dale	Sept. 15-18
Sangamon	Springfield	State fair
Schuyler	Rushville	Sept. 7-10
Shelby	Shelbyville	Sept. 21-25
Stark	Toulon	Sept. 21-24
Tazewell	Delavan	Sept. 14-18
Union	Jonesboro	Sept. 14-18
Vermillion	Catlin	Sept. 7-10
Vermillion	Danville	Aug. 31-Sept. 4
Vermilion	Hoopeston	Aug. 23-27
Wabash	Mt. Carmel	Sept. 26-30
Warren	Monmouth	Sept. 7-10
White	Carmi	Sept. 7-11
Whiteside	Sterling	Sept. 14-17
Whiteside	Morrison	Sept. 7-10
Whiteside	Albany	Sept. 1- 3
Williamson	Marion	Sept. 28-Oct. 1
Winnebago	Rockford	Sept. 13-17

MICHIGAN.

Aipena	Aipena	Oct. 5- 8
Bay	Bay City	Sept. 28-Oct. 1
Benzie	Benzonia	Sept. 23-24
Branch	Coldwater	Sept. 21-24
Calhoun	Marshall	Oct. 4- 7
Cheboygan	Cheboygan	Oct. 4- 5
Chippawa	Sault Ste Marie	Oct. 4- 5
Clinton	St. Johns	Oct. 4- 5
Genesee	Flint	Sept. 28-Oct. 1
Grand Traverse	Traverse City	Sept. 28-Oc. 1
Grstiot	Ithaca	Sept. 21-24
Hillsdale	Hillsdale	Sept. 21-Oct. 1
Huron	Bad Axe	Oct. 7- 8
Ingham	Mason	Sept. 22-24
Jackson	Jackson	Oct. 4- 8
Kalamazoo	Kalamazoo	Sep. 28-Oct. 1
Lapeer	Lapeer	Sept. 28-Oct. 1
Lenawee	Adrian	Sept. 28 Oct. 1
Livingston	Howell	Sept. 21-24
Macomb	Mt. Clemens	Sep. 29-Oct. 1
Mason	Ludington	Sept. 21-23
Mecosta	Big Rapids	Sept. 28-30
Midland	Midland	Oct. 6- 8
Newago	Newago	Sep. 29-Oct. 2
Oakland	Pontiac	Sept. 28-Oct. 1
Oceana	Hart	Sept. 28-Oct. 1
Osceola	Evart	Sept. 28-30
Plainwell	Plainwell	Oct. 5- 8
Saginaw	East Saginaw	Sept. 28-30
Sanilac	Lexington	Sept. 27-30
Shiawassee	Owasso	Sept. 21-23
Tuscola	Watrousville	Sep. 29-Oct. 1
VanBuren	Paw Paw	Oct. 5- 8
Washtenaw	Ann Arbor	Sept. 28-Oct. 1
Wexford	Sherman	Sept. 30-Oct. 1
Union	Ovid	Sept. 28-Oct. 1
Violinia Far. Club.	Violinia	Oct. 4- 5

WISCONSIN.

Beloit	Beloit	Aug. 31-Sept. 8
Boscobel	Boscobel	Oct. 5- 8
Calumet	Clinton	Oct. 6- 8
Columbia	Portage City	Sept. 13-15
Clark	Nellisville	Sept. 14-16
Fon du Lac	Fon du Lac	Sept. 15-17
Grant	Lancaster	Sept. 22-24
Green	Monroe	Sept. 15-18
Jefferson	Fort Atkinson	Sept. 14-17
Iowa	Dodgeville	Sept. 22-24
Kenosha	Woodworth	Sept. 21-23
Lodi Union	Lodi	Sept. 28-30
Oshkosh	Oshkosh	Sept. 13-18
Portage	Amherst	Sept. 15-17
Ripon	Ripon	Sept. 1- 2
Racine	Burlington	Sept. 14-17
Rock	Janesville	Sept 14-17
St. Croix	Hudson	Sept. 15-17
Sauk	Reedsburg	Sept. 28-30
Tepin	Durand	Sept. 1- 3
Walworth	Elkhorn	Sept. 21-24
Watertown	Watertown	Sept. 20-24
Waukesha	Waukesha	Oct. 5- 7

IOWA.

Adair	Greenfield	Sept. 1- 3
Alamakee	Waukon	Sept. 21-23
Appsnoose	Centerville	Sept. 9-11
Audubon	Audubon	Sept. 15-17
Benton	Vinton	Sept. 13-17
Black Hawk	Waterloo	Sept. 14-16
Boone	Ogden	Sept. 16-18
Bremer	Waverly	Sept 14-17
Buchanan	Independence	Sept. 14-16
Butler	Shell Rock	Sept. 14-16
Cass	Atlantic	Sept. 21-24
Cedar	Tipton	Sept. 14-17
Chickasaw	New Hampton	Sept. 22-24
Clarke	Osceola	Sept. 21-23
Clay	Spencer	Sept. 1- 3
Clayton	Garnovillo	Sept. 14-16
Crawford	Denilson	Sept. 15-17
Dallas	Adel	Aug. 31-Sept. 3
Davis	Bloomfield	Sept. 15-17
Decatur	Leon	Sept. 14-18
Delaware	Manchester	Sept. 14-17
Des Moines	Burlington	Sept. 21-24
District	Agency City	Oct. 5- 8
District	Mechanicsville	Sept. 14-16
District at Mt. Joy	Davenport	Sept. 15-17
District	W. Point	Sept. 7-10
Fremont	Hamburg	Sept. 13-18
Greene	Jefferson	Sept. 15-17
Grundy	Grundy Center	Sept. 22-24
Guthrie	Guthrie Centre	Sept. 13-16
Hardin	Eldora	Sept. 15-17
Harrison	Mo. Valley	Oct. 6- 9
Henry	Mt. Pleasant	Sept. 14-17
Humboldt	Humboldt	Sept. 15 17
Jackson	Maquoketa	Sept. 8-11
Jasper	Newton	Sept. 28-Oct. 1
Lee	Donuelson	Aug. 31-Sept. 3
Mahaska	Oskaloosa	Aug. 24-27
Marion	Knoxville	Aug. 24-27
Marshall	Marshall'wn	Aug. 31-Sept. 3
Monona	Onawa	Sept. 17-18
Monroe	Albia	Sept. 14-17
Montgomery	Red Oak	Aug. 31-Sept. 3
Maple Valley	Battle Creek	Sept. 14-15
Osceola	Sibley	Sept. 16-17
Page	Clarinda	Sept. 7-11
Poweshiek	Brooklyn	Sept. 14-17
Poweshiek Cen'l.	Malcomb	Aug. 31-Sep. 3
Poweshiek	Malcomb	Sept. 8- 4
Scott	Davenport	Aug. 30 Sep. 3
Story	Nevada	Sept. 2- 4
Stuart District	Stuart	Sept. 28-30
Union	Afton	Oct. 6- 8
Union	Strawberry Pt.	Sept. 21-24
Union	Villisca	Sept. 14-16
Union	Wt. Liberty	Sept. 1- 3
Warren	Indianola	Sept. 28-30

Winneshiek	Hesper	Sept. 15-16
Worth	Northwood	Sept. 16-18

NEBRASKA.

Butler	Davis City	Sept. 15-17
Cass	Plattsmouth	Sept 15 17
Central Nebraska	Hastings	Sept 13-16
Clay	Sutton	Sept 8-10
Dawson	Cozad	Sept. 15-17
Dodge	Fremodt	Sept. 14-17
Franklin	Franklin City	Sept 8-10
Gage	Beatrice	Sept. 14-17
Hall	Grand Island	Sept. 16-17
Jefferson	Fairbury	Sept. 13-15
Johnson	Tecumseh	Sept. 15-18
Kearney	Minden	Sept. 10-12
Lancaster	Lincoln	Sept. 14-16
Otoe	Syracuse	Sept. 14-16
Nebraska City	Nebraska City	Sept. 6-11
Richardson	Salem	Sept. 15-17
Saline	Crete	Sept. 14-16
Washington	Blair	Sept. 14-16
York	York	Sept. 14

KENTUCKY.

Anderson	Lawrenceburg	Aug. 17-20
Bath	Sharpsburg	Aug. 3- 6
Boone	Florence	Aug. 31-Sept 4
Bourbon	Paris	Sept. 7-11
Boyd	Ashland	Sept. 29-Oct. 1
Boyle	Danville	Aug. 10-13
Christian	Hopkinsville	Oct. 6- 9
Daviess	Owensboro	Oct. 13-15
Fayette	Lexington	Aug. 31-Sept. 4
Franklin	Frankfort	Sept. 21-24
Harrison	Cynthlana	Aug 24-28
Henderson	Henderson	Sept. 28-Oct. 2
Madison	Richmond	Aug. 17-20
Mason	Maysville	Sept. 21-24
McCracken	Paducah	Oct. 5- 9
Mercer	Harrodsburg	Aug. 3- 6
Nelson	Bardstown	Sept. 7- 9
Shelby	Shelbyvliie	Aug. 24-27
Simpson	Franklin	Sept. 16-18
Washington	Springfield	Aug. 18 21

MISSOURI.

Mississippi	Charleston	Sept. 21-24
S. E. Distric.t	Cape Girardeau	Oct. 12-16
St. Francois	Farmington	Sept. 14-18

SOUTH CAROLINA.

Anderson	Anderson	Oct. 20-22
Abbeville	Abbeville	Oct. 13
Barnwell	Barnwell	Oct. 20-22
Newberry	Newberry	Oct. 6- 8
Orangeburg	Orangeburg	
Sumter	Sumter	Oct. 13-15
Union	Union	Oct. 26-28

KANSAS.

Cherokee	Columbus	Sept. 22-24
Crawford	Girard	Sept. 7- 9
Dickinson	Abilene	Oct. 15-16
Doniphan	Troy	Sept. 28-Oct. 1
Franklin	Ottawa	Sept. 29-Oct. 2
Greenwood	Eureka	Oct. 7- 9
Harvey	Newton	Sept. 29-Oct. 1
Jackson	Holton	Sept. 7-10
Jefferson	Oskaloosa	Sept. 28-Oct. 2
Labette	Oswego	Sept. 14-17
Linn	LaCygue	Sept. 28-Oct. 1
Lyon	Emporia	Sept. 7-11
Marion	Peabody	Sept. 21-23
Marshal	Marysville	Sept. 21 24
Miami	Paola	Sept. 29-Oct. 2
Montgomery	Independence	Sept 30-Oct. 2
Morris	Parkerville	Sept. 20-22
Ottawa	Minneapolis	Sept. 22-25
Phillips	Phillipsburgh	Sept. 14-16
Reno	Hutchinson	Sept. 22 25
Riley	Manhattan	Sept. 28-Oct. 1
Sedgwick	Wichita	Sept. 14-17
Shawnee	Topeka	Oct. 5- 8
Washington	Washington	Sept. 15-17

The Texas State Agricultural and Mechanical College, is preparing for active work. It has made an excellent move in the right direction in the appointment as Professor of Agriculture and Horticulture, Mr. C. C. Georgeson. Professor G. graduated a few years ago at the Michigan Agricultural College, and has for some time been engaged upon the "Rural New Yorker," of this City. Mr. G. is one of the coming men in the agriculture of this country, and will in his new position find a much wider and more congenial field of usefulness than he has heretofore occupied. From our knowledge of Prof. G. we can cheerfully commend him to the favorable consideration of our Texan friends. We shall be disappointed if he does not in time show the wisdom of the appointment, by rendering essential service in the development of the agriculture of that large and most beautiful State.

Rabbits Not Wanted.—Several months ago, we suggested that those who had choice rabbits for sale should make the fact known. It had reference to Lop-eared and Angora breeds, and as a hint to dealers who had these for sale to advertise them. Parties continue to write us that they have choice common rabbits for sale. We do not wish to buy rabbits.

How to Kill a Beef.—Intelligent butchers understand that the quality of the beef is influenced by the manner in which the animal is killed. Prolonged torture promotes secretions which are injurious to the flesh. In the large slaughter houses the method of *pithing* is now generally introduced and consists in piercing the posterior part of the brain with a sharp instrument called a *spud*. The operator, who must be a very cool and experienced one, stands upon a platform above the cattle and thrusts the spud into the brain; the animal falls and is insensible in an instant. This humane method is not practicable for farmers who have few animals to kill during the year. In killing in the ordinary manner the object is the derangement of the brain, as this is the seat of consciousness, and therefore of sensibility to pain; consequently the blow must be directed at the brain. For beeves the exterior point to be struck is the intersection of the two lines joining the base of the horn and the opposite eye—a point above and not between the eyes. The blow may be by either a bullet, an axe, or hammer. If the butcher is a good shot, he may use the rifle, otherwise the heavy hammer or axe. The head of the animal being first securely fastened and then blindfolded, a single blow of either bullet or hammer should be sufficient; after which the throat should be cut and the bleeding accomplished.

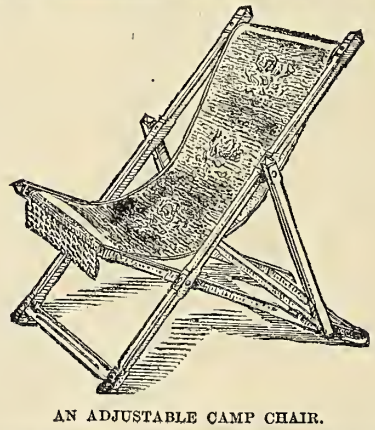
Care of Root Crops.—A good crop of roots can not be expected without the ground is kept clean by frequent cultivation. Many farmers prepare the ground properly and sow the seed with care, and then leave the young plants to strive against the weeds as best they may. Such work can not pay; careful preparation must be followed by clean culture. An outlay of $5 or $10 in weeding and hoeing, may very easily make $25 to $50 difference in the crop; in fact it may make the difference between a crop of roots and a rank growth of weeds that cover the ground and fill it with foul seed. If roots are to be grown we must help them by keeping out the weeds. No other way will be successful.

"Blanketed" Cattle.—"J. S. B." These cattle were imported into this country many years ago. They are excellent milkers and are found in herds in Orange and other counties in New York. Several names have been given them such as "Belted," "Sheeted," "Draped," etc., all founded on the leading characteristic—a broad belt of white passing around the middle of the body, while the front and rear portions are black. This peculiar and quite constant and uniform marking makes these herds particularly striking to the eye, as they feed on the meadows and hillsides. In Holland, from which our "Blanketed" Cattle came many years ago, this breed is highly esteemed by many and preserved with care.

Log Drains, that will last for several years, may be made, but they should be laid down only when other kinds are out of the question. The ditches for them are dug in the usual manner and the logs placed in the bottom so as to make a throat or water channel. Two logs are placed along the sides of the bottom, and the third rests upon these two, the side logs being kept apart by the pressure of the middle one. Brush or sods should be put in, to fill any small spaces between the logs, when the ditch can be filled. Such drains are of special value in newly settled regions where logs are the only materials at hand for the drains that must be constructed at once.

The Adjustable Folding Camp Chair.

When we came across the chair described on page 317, last month, at the house of a friend in the country, we looked in vain for the name of the maker. Knowing that devices not one tenth as useful and sensible were patented, we were surprised not to find either the customary "Patented," or "Patent Applied for" anywhere upon the chair. All that our friend knew about the chairs was, that he had bought them of some one who offered them at his office in the city. It now appears that the chair *was* patented, but that some one without proper notions of right and wrong had copied the design and made and sold the chairs. The chair is patented by Gifford & Bates, and is sold by A. W. Moorehouse, No. 242 Canal St., who, when he discovered the error, informed us of the real state of the case in a manner that makes it a pleasure to correct the mistake. No matter



AN ADJUSTABLE CAMP CHAIR.

how much we may try to avoid them, such errors will occur, and all we can do is to state the fact, that the article is patented, and that no one has a right to make a chair of the style referred to, without the permission of the owner of the patent. There is a very common impression that any one can make a patented article for his own use, without reference to the patentee. This is a mistake. No one has a right to make a patented article for his own use, and he has no right to use one that another person has made in disregard of the patent. As to the chairs in question, our good opinion of them is increased after seeing those made by Mr. Moorehouse. The chief fault of those we first saw was, that they were just a little too narrow; while Mr. M.'s have ample width; they are moreover much better finished. The engraving given last month gives an idea of the plain style for the lawn, veranda, or camp, but some are made for the house which are as elegant as they are convenient and comfortable. We give an engraving of one of the more highly finished chairs, which has the wood work in ebony finish, relieved by a little gilding, while the back and seat, instead of duck, as in the others, are formed by a piece of Brussels carpet. The chairs fold up in the most compact manner and only occupy the thickness of one side piece, allowing of very close packing either for transportation or storing away when not in use.

Protection of Soils in Winter.—Some French physicists have been recently making some extended experiments upon the temperature of soils during winter. They have found a striking difference between the temperature of soils covered with grass—a sod—and those that had their upper surface exposed directly to the air, the sod most effectually protecting the soil from the action of frost. In the case of snow, it was found to be an excellent screen against changes of temperature—its value as a "blanket" is more as an equalizer of temperature, preventing sudden changes on account of its poor conducting power than to keep out the cold. A thick sod or a mulch of leaves of the same thickness, is better protection to the soil and living plants than snow.

Feeding from the Hand.—It is remarkable how gentle the farm stock may become by kind and considerate treatment. Take, for example, calves at this season of the year; an occasional handful of meal, fed to them from a dish, will do them a double good; it will aid in their growth and make them easier to handle when they become older. The custom of carrying some salt to the sheep every time one goes to their pasture, though it may not do them much good, pays in the gentle disposition which it develops in the flock. Little acts of kindness are not forgotten, even by the dumb animals.

The Most Science Thing.—The talk of the venders of various wares along the city streets is sometimes quite amusing. One with a peculiar top a few days ago in front of our office thus presents its claims—"Here, sir, is the most science thing ever offered. I tell you there ain't nothing sold on the street so science as this."

Bots in Horses.—This trouble is due to the maggots or grubs of a fly which fasten themselves upon the lining of the stomach and sometimes that of the intestines of the horse. The female fly deposits her eggs singly upon the hairs of the lower jaw, neck, and forward legs of the horse. They hatch in a short time, and the tickling sensation produced by the young grub causes the horse to lick the place, and thus the grubs pass into the horse's mouth and from thence into the stomach, where they soon fasten themselves by numerous minute hooks in rows upon their white wrinkled bodies. After about two months the bots pass from the horse and bury themselves in the dung and remain in the dormant pupa state until the next season, when the fly begins the round of trouble again. The maggots irritate the coat of the stomach and cause the formation of pus, upon which they feed. There is no remedy for this troublesome parasite. A dose of physic may help to dislodge them, or hasten the time for their removal from the animal.

"Oil Dropping from Trees."—It is not oil; but instead a sweet, syrup-like liquid that exudes from the bodies of plant-lice (*Aphides*) which feed upon the younger portions of the trees. This "Honey Dew," as it is called, is frequently so abundant as to cover the ground, and the side walks in cities—where it is most frequently spoken of as "oil." Bees frequent such trees and gather the sweet exudation for the purpose of making it into honey. Ants are also fond of it and are often found in large numbers feeding upon the Honey Dew.

Black Birds.—"B. J. G.," Nashua, Iowa, states that he keeps Black Birds away from the corn crib, by hanging around them pieces of bright tin, by means of wires in such a manner that they will swing in the wind.

Lime as a Manure.—There are direct and indirect manures; that is, substances which themselves contain and furnish the plants with essential elements of their growth, and others that only feed the plants by acting upon other compounds which thereby yield a supply of nourishment. Of this latter class is lime as it is generally used. A good dressing of lime may double the yield of wheat on a field—not any and every field, but on some fields.—Now, why is it, that it will produce this remarkable increase on some fields, and that too when there is already sufficient lime in the soil to furnish all of that mineral needed by the growing crops for a score or a hundred years to come? The soil on which the lime has such a powerful influence, abounds in undecomposed organic matter; the lime decomposes this matter and those compounds that are needed by the growing plants. It is principally to the nitrogen compounds set free that the increased production is due. The lime was the indirect cause of the greater growth.

Gather the Leaves.—The leaves that fall from the trees in autumn may be turned to good account if they are gathered and used for litter in the stables. They furnish an excellent absorbent for liquid manure and are of themselves a valuable fertilizer, as they contain large per cents of potash, phosphoric acid and other essential elements of plant food. To gather the leaves rapidly a long-headed rake provided with stout teeth should be used, and the leaves loaded into a cart or wagon, and taken to a place where they may be kept dry and handy for use. Besides the direct value of the leaves, the raking of them from the door-yard, for example, gives it a neat appearance, when it would otherwise look ill kept.

Ventilator for Root Pit.—In pitting roots, openings should be left for the escape of the moisture that will rise from the heap of roots. If such openings are not provided the vapors will accumulate and decomposition will soon begin, and in a short time the roots will be rotten. A simple opening at the top of the pit, or at intervals along the ridge, if the heap is one of considerable size, is not sufficient. The ventilator should run down into the heap, even to the bottom. Such an one can be made by tying three or four short rails together, and setting them in the ground before the roots are deposited. The rails should project a few inches above the top of the pit, after the covering of earth has been put in place. A layer of straw may be put over the top of the ventilator to keep rain from running in.

Pear Seed.—"T. G.," Cobden, Ill., asks how to preserve pear seed so that it will germinate in spring, stating that he tried keeping it in sand over winter, but it failed to grow. As our correspondent does not state just how he kept the seeds in sand, we cannot suggest where the trouble is. If the pear seeds are mixed with sand that has a little moisture that it will not stick together when squeezed, and the seeds when mixed with it kept in a place where the temperature is uniform and cool, but not freezing cold, we think he will have no difficulty with their germination.

A Precocious Calf.—"J. T.," Baltimore, Md., writes that he has a grade Jersey heifer calf, which has never seemed to care much for milk, but has a marked preference for grazing. The calf ruminated when but two days old and has continued to do so, the cud coming and going with all the regularity of an experienced cow. He asks: "is not this very remarkable?"—It is, or perhaps we may say would be, with any breed but the Jersey. These animals have been long bred to be precocious; they come to maturity at a very early age, and this chewing the cud so young is but one manifestation of the general precocity of the breed.

The Teeth.—"G. M. B.," Sterling, Ill., referring to something said in the "Household," on the care of the teeth, gives his own method, adopted by the advice of a skilled dentist. The teeth having been properly cleaned and the incrustations of tartar removed by a dentist, he every night thoroughly washes the teeth inside and out, by using a lather made from White Castile Soap, applied by means of a swap, made by tying a bit of fine, soft sponge to a stick of convenient length. Soap is an excellent application, and in most cases nothing more is required to keep the teeth in perfect order. Some of the best of the dentrifices sold at the shops, consist largely of powdered soap.

"Slugs" on Pear and Cherry Trees.—The greenish, slimy, leech-like insect, often so common on fruit trees, especially on the cherry and pear, is generally called a "slug." It is, however, a proper larva, or grub of a small, shining black fly—*Selandria cerasi*. The sprinkling of fine quicklime, or fine dust has been found effective. "J. A. B.," writes from Philadelphia, that he finds White Hellebore, mixed with water, as advised for currant bushes, perfectly successful in killing the slug. There are two broods, a late one in September usually succeeds the one which comes in June.

About a Hay Sweep.—An implement drawn by two horses to gather up a windrow of hay easily and rapidly has long been in use. Having several letters asking us to describe such a sweep, we reproduced in May last an engraving given in Thomas' "Farm Implements." We now learn from J. E. Potter, of Ottawa, Ill., that the Sweep in question conflicts with a patent which he holds. Mr. P. sends us a copy of the specifications, from which it plainly appears that one can not construct a Hay Sweep according to the design of that given in May without infringing upon the patent. Of course, had we had any idea that the Sweep had been patented, we should have had more regard for the rights of others than to publish it, but as the book referred to said nothing about a patent, we assumed that, like many other things it illustrates, the design was common property. We take all possible care to respect the rights of inventors and patentees, and we have too much regard for the interests of farmers to knowingly lead them to violate these rights. It is but just to say that Mr. Potter, who holds the patent, takes a very fair view of this matter, as he sees that it was through inadvertance on our part that we gave the Sweep as unpatented. Farmers disposed to build a Sweep after this pattern are now informed that they have no right to do so without first corresponding with Mr. Potter, whose address is given above.

Tips for Children's Shoes.—If a boy does not wear out the toes of his shoes, he must be a very quiet youngster and not have much "go" in him. Ragged shoes with the toes in sight are not pleasing to the sight of the parent, but we had rather see them than the well kept shoes of the boy who has not vim enough to play and wear out the toes. But we can now have both—lively boys and whole toes. At one time the use of copper tips to shoes were quite common, but boys never took to them kindly; perhaps they seemed too much the mark of the naughty boy. At any rate, this objection is removed by the Black Tips, advertised in our columns. These will protect the toes as well as the metal ones, and being black, like the leather, are not conspicuous.

Grapes from a Raisin Seed.—This time the vine grew at Huntsville, Alabama. Miss R. M. Lowery planted the raisin seed in the spring of 1875, and in the summer of 1880 Mr. Lowery brought us several of the 120 bunches it bore. Raisins are made from the European grape, and the sample brought us was as genuine an American as the Concord. This is but one of many instances in which we have seen American grapes which the raiser sincerely believed to have come from a raisin seed. It is much easier to suppose that the raisin seed did not germinate, and that a seed which was in the soil did, than to believe that a European grape seed could produce such a widely different fruit as the one shown us.

The Cactus.—"A. W.," Phœnixville, Pa., asks how to cultivate "the Cactus," but as he adds that he has several varieties, he no doubt means plants of the Cactus family. These plants flower, then make their growth, during which they need water like other plants. When the new growth is mature, the plants go into a state of rest, in which they require little or no water, but the earth may become quite dry. When their season for blooming comes around again, the plants are given water gradually at first, and more as their buds swell, and they go through the same round of blooming, active growth, and rest as before. So far as those in general cultivation go, there are two classes, the winter and summer bloomers. The Epiphyllums, or Crab's-claw Cactuses, are the chief winter bloomers, coming into flower in early winter, and consequently have their season of rest, or drouth, in summer. On the other hand, the large and brilliant flowering varieties of which the old *Cereus Speciosissimus* is a familiar example, can rest in a dry state anywhere if not cold enough to freeze them, and are brought into bloom in summer. The larger number of the common varieties belong to this class, and it is useless to try, as many do, to bring them into bloom in winter.

Net-work Wire Fences.—Our readers have seen by articles given some months ago, what a wonderful variety there can be in fences made merely of horizontal strands of wire stretched between posts. But the use of wire in fencing has by no means been exhausted in these styles. The Sedgwick Steel Wire Fence is upon a very different plan: this is a net-work of wire, with diamond-shaped meshes, presenting really a coarse lace-work woven of steel wire. Formerly, like lace, this net-work was made by hand, but the invention of machinery for weaving it has greatly reduced the price of the net-work, and increased its uniformity and excellence. Not only are fences made of the net-work, but gates are of the same material. A fence of this kind not only serves to keep in—or out—the larger domestic animals, but the mesh is so small that dogs, pigs, and poultry find it an effective barrier. Besides its use as fencing, the net-work will serve other purposes, such as building arbors and trellises for vines, etc. The neat appearance of a net-work wire fence, as well as its utility, commends it.

The Cornell Experiment Station.—Cornell University has published a report of the agricultural experiments that have been made there, and we are informed that it may be had by remitting 30c.—which covers the cost of publication and postage—to Prof. W. R. Lazenby, Ithaca, N. Y.

Gathering Pumpkins.—There are probably more liberties taken with pumpkins than any other product of the farm. It may be because they usually grow amongst the corn, and seem to have no place given them by themselves, that they have so few rights that the farmer, and especially the farm boy, is bound to respect. The pumpkin is a valuable product of the farm, and is well worthy of careful harvesting and economical feeding. When the corn is cut, there is a large knife in the cutter's hands, and a fine, smooth-faced pumpkin is a tempting object to slash into. Yes! a pumpkin is a fine object to sit down upon to rest, and then the knife is again used to make all sorts of scratches, gashes, etc., and the sitting frequently ends in the destruction of the seat. The pumpkins that escape the corn-knives are either left in the field through the hard frosts, or are drawn to a fence corner, where they are left in a pile, exposed to rain, snow and frost. When they are gathered, a fork is most frequently used, and every pumpkin receives from one to half a dozen thrusts and other bruises, so that decay must soon set in and destroy what is left. If pumpkins are worth growing, they deserve care in harvesting. If left alone when the corn is cut, and gathered before the frosts come, being put under cover without using a fork, the pumpkin crop will pay a far greater profit than it does now upon many farms.

Canning Green Corn.—Each year we are asked to give directions for preserving green corn in cans, and each year we are obliged to say that we know of no successful method other than that practised at the canning factories. This requires tin cans and the use of the soldering iron; and only those who can solder can put up the corn. The points to be observed are these: The best and sweetest corn, in just the right state for the table, is picked and used at once. The canners use a keen knife to cut it rapidly from the cob, and some have a machine for the purpose. The corn is cut from the cobs, and packed closely in the cans. The cobs are put into a boiler, covered with water, and boiled for about an hour. This liquid is used to fill the spaces among the kernels in the cans, enough being used to cover them, and, unless the corn is very sweet, a teaspoonful of white sugar is added. The caps of the cans are then soldered on, each cap having a small vent-hole pricked in its center. The cans being soldered, the next step is what the canners call "processing," which is to boil the cans in water. A wash boiler, or any convenient kettle can be used; it should have at the bottom a rack made of strips of wood, on which to set the cans. The cans of corn are put in the "processing" kettle, with the vent-hole open, and are boiled briskly for two hours. They are then lifted out, one by one, using tongs made for the purpose, setting each down with a sharp rap, to knock down any corn that may be upon the inside of the cap. The cover is then pressed in as much as possible, and the vent-hole stopped by a drop of solder. The cans are then returned to the kettle, and boiled for four hours longer. Operators differ as to the time of "processing," some of them making it a secret, but from 6 to 8 hours in all seems to be necessary for corn.

Horticulture in the Mississippi Valley.—A large number of the wide-awake horticulturist's living in the Valley of the Father of Waters, have formed a preliminary organization, with a view to complete the formation of a Horticultural Society on the 8th of the present month. In this month there will be held an exhibition at St. Louis, Mo., beginning on the 7th, and continuing for three days, at which numerous premiums are to be awarded, and these are so liberal that they can not fail to call forth one of the finest collections of fruits, flowers, etc., ever seen in this country. All, without regard to locality, are invited to contribute. Those who have never seen the fruits grown in this western country, should take advantage of this exhibition, as it will give them new ideas of fruit culture, and impress them with the wonderful possibilities of our wide country. Fruit for the exhibition may be forwarded to N. J. Coleman, St. Louis, Mo., care of St. Louis Fruit House, 708 South Third St. The Laclede Hotel, corner of 5th and Chestnut Streets, will be the headquarters of the Society, and make reduced terms to members.

Salting Pickles.—The pickle factories buy the cucumbers from the growers, and salt them in large vats. Those who raise cucumbers at a distance from factories salt them in barrels. Barrels for the purpose must be tight and clean; whiskey and alcohol barrels are usually the best. Half a bushel of the best salt is required to the barrel, though some growers use less. A head is removed from the barrel, and a layer of cucumbers put in, with some salt sprinkled among them. A board follower is placed on the cucumbers, and water enough added to completely cover them. The next day, more cucumbers are put in, and so on until the barrel is full. If enough are picked in one day, the matter is very simple. Fill the barrel with cucumbers, sprinkling in the salt, and head up tight. Then fill the barrel with water through the bung-hole, and bung up tight. Where there are not enough picked to fill a barrel, then they must be added to from day to day, taking care that those already in the barrel are kept covered with the brine, using stones as weights to keep the follower down upon them.

Keeping One Cow.—The three admirable prize essays on this subject have been published in our pages, and many will be glad to have them together in a more convenient form. There were in many of the other essays hints of great practical value, and in some cases these were very full upon points in which the prize articles were deficient. In order to present the whole subject, the prize essays and copious extracts from the best of over sixty others have been brought together in a bound volume of 144 12mo. pages. The work is well illustrated, contains editorial explanatory notes, and presents in a neat and compact form the most complete and latest information upon the best method of treating the family cow, in order to make her as useful as possible to the family. Published by the Orange Judd Company, and will be sent post paid, by mail, for $1.

Young Men in Horticulture.—From time to time we have had letters from young men with tastes for horticultural pursuits, asking where they could go for instruction in the propagation of plants and other matters relating to plant culture. Generally we have not been able to aid such applicants, but at present we know of an opening where the proper applicant can receive such instruction. Address "Horticulturist," care of the Editor of the *American Agriculturist*.

Unprofitable Animals.—As the season draws to a close, the farmer should know enough about his farm animals to be able to cull out any that have not been profitable. If a poor cow has been in the dairy through the summer, he should now decide to not keep her another year, and begin to fatten her for beef. In the same way the flock of sheep may be improved by "weeding out" the inferior animals, allowing only the good, profitable ones to reproduce their kind. By thus casting out inferior animals the stock of the farm will be continually improved; while by breeding only from the best, and keeping only those animals that pay, much may be done to raise the standard of all our domestic animals.

Getting Rid of the Elder.—"W. J. M.," Washington, Pa., finds the common Elder troublesome in his fields: he has tried grubbing and cutting with no effect, and asks how he can get rid of it. There is no specific for destroying shrubs when they appear as weeds, any more than there is for herbs. We must follow that course that will kill them, and that is usually "grubbing and cutting," which, if persevered in, will conquer in time. Grub up the larger clumps, and mow off the shoots that start from the smaller ones, and from the roots left in the ground. Once or twice cutting may make no visible impression, but keep at it, and mow as often as any green shoot appears, and if the mower does not tire and give it up, the shrub will. Sheep are often most useful aids in exterminating shrubs. We do not recollect whether they will eat the strong-smelling foliage of the Elder, but if they will, keep them on the patch by means of a portable fence, and they will render essential service. The fact that shrubs, if cut at midsummer, make a new growth with less vigor than when cut earlier, has given rise to a notion that there is a proper "time of the moon" to cut shrubs—and so there is. When they are cut, it is always done in just the right time of the moon.

Coal-Oil Barrels.—Some months ago we asked those who had succeeded in rendering barrels which had held kerosene or petroleum fit to use for cider or vinegar to give us their method. It is rarely that we have had such a number of replies to a like question, they having come by dozens and scores. We thank all who have thus responded, and would say that while a few have advised burning out the barrels, by far the greater number have found that soaking in water will answer. Some advise immersing the barrel in a stream, but the majority of those who have written us find that filling with water, and allowing the barrel to soak for several days, occasionally changing the water, accomplishes the object.

White Hellebore and Paris Green.—"E. H. S.," Titusville, N. J. Neither of these poisons can be substituted for the other in treating Currant Worm and Potato Bug. Hellebore will not kill the beetle, and while Paris Green will no doubt kill the Currant Worm it is unsafe to use it on anything that is to be eaten. White Hellebore has been used for many years and by some who grow currants largely for market. We have not heard of a single case in all this time of any injury resulting from eating fruit that had been treated with it. The quantity put upon each bush is small, and even if the fruit had sufficient on it to be perceptible, it would be regarded as soiled and either rejected or washed. It would not be possible for one to eat enough to do serious injury without finding it disagreeable to the taste; the first effect of a moderate dose is to cause vomiting. We can not see that one can possibly be injured through its use on currants, or we would not recommend it.

Bee Notes for September.

The general honey yield is now over in most localities, and the surplus honey that still remains in the hives should be removed at once. The practice of leaving boxes upon the hives after the honey season is over should be avoided. Remove the boxes and pack them away in a clean place where they will be ready for use the following season. Some of the boxes will be partly filled with honey, these, if they are single-comb ones, should have the honey removed by an extractor and the empty comb will serve as a guide the next season. The combs in the brood-nest need watching and if the moth-worm is found they should be smoked with brimstone. The preparations for successful wintering are to be made now. It is very desirable that each colony should be supplied with a large number of young bees as it goes into winter quarters. In order to obtain this end a prolific queen should be in every hive. Young queens usually deposit more eggs and for a longer time than old ones, and on this account are much to be preferred.

MARKETING HONEY.—Where the amount is small it may be disposed of with greatest profit in the home market. Larger quantities will, of course, be shipped to a city market—and provision for quick and safe transportation will need to be provided. A shipping case for box honey should hold from 10 to 25 pounds. It can be made of light basswood, nailed together. Before filling the cases see that each box of honey is as neat and clean in appearance as possible.

EXTRACTED HONEY.—Much of the honey is marketed as liquid or extracted honey. The forms in which it is put up are various. For small packages, quart glass jars are much used; larger packages may be either of tin, holding 10 to 20 lbs., or firkins holding 150 to 200 pounds.

Nuts and Nubbins.

The little peach catches the early market.

The most fatal grape-shot comes from the bottle.

Many a property owner is poor in purse but rich in deed.

The civil engineer would like to be monarch of all he surveys.

Our first parents got their suit if they were evicted from their homes.

You mustn't think a dentist is mad because you catch him grinding his teeth.

A fifty-dollar painted fan raises no more wind than the five-cent palm leaf.

The society lady never sheds tears. She knows enough to keep her powder dry,

The report that the baby elephant was born with a valise instead of a trunk is incorrect.

"A prudent man," says a witty Frenchman, "is like a pin. His head prevents him from going too far."

A woman isn't fit to have a baby who doesn't know how to hold it; and this is as true of a tongue as of a baby.

"Penny wise, and pound foolish," soliloquized the man in church, and he put the penny in the box and the pound in his pocket.

The *Keokuk Gate City* wishes to know if a retired baggage-master can be appropriately referred to as the company's ex-checker.

It has been proved that after kindling his fire a miser stuck a cork in the nozzle of the bellows to save the little wind that was left in it.

Scientists claim that smoke injures the eyesight. But this is not true. The boy with a stump in his mouth can see his father ten squares away.

In concluding an article on the last corn crop an Alabama editor remarked "We have on exhibition in our sanctum a magnificent pair of ears."

"John, how many times have I told you always to eat bread with your meat?"—"Papa, how many times have you told me not to do two things at a time?"

Teacher in high school: "Are *pro* and *con* synonymous or opposite terms?"—Scholar; "Opposite."—Teacher: "Give an example?"—Scholar: "Progress and Congress."

The brilliant Sophie Arnold, when she heard of a certain diplomatist that had been eaten by the wolves, exclaimed: "Poor brutes! Hunger must indeed be a terrible thing!"

An exchange says that a ton of gold is worth only about half a million dollars. We give this for what it is worth; our time has been so taken up with politics, and somebody has hidden away the scales.

Smithington, who is forever reeling out the same old yarn, explains by saying that he has always heard that one story's good till another one's told, and he doesn't propose to spoil his by telling another.

When a census taker, wishing to compliment, said to a citizen: "Ah, sir, you've a wife of a hundred!" the lady grabbed a rolling-pin and sailed on him, saying: "You villian, I told you I was only 25. Don't you dare to put it down as 100!"

The cable informs us that "Tekke Turcomans at Dashberdi menace the line betwixt Chattc and Tchikislar." We have been tremblingly anticipating this news for months. War is a terrible thing. It develops hard feelings and harder names.

There was a man who had a clock, His name was Matthew Mears, He owned it regular every day for four-and-twenty years. At last his precious timepiece proved an eight-day clock to be, Then a madder man than Mr. Mears I would not wish to see.

Lately a gentleman sat down to write a deed, and began with: "Know one woman by these presents."—"You are wrong," said a bystander; "it ought to be 'know all men.'"—"Very well," answered the other, "if one woman knows it, all men will, of course."

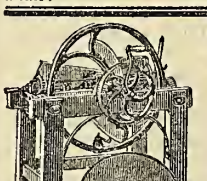
"Goods at half price," said the sign. "How much is that teapot?" asked the old lady who had been attracted by the announcement.—"Fifty cents, mum."—"I guess I'll take it, then," she said, throwing down a quarter. The dealer let her have the teapot, but took in his sign before another customer could come in.

"My daughter, never tell any one your private affairs," said a mother in sending her daughter away upon her first journey. "Monsieur, a third-class ticket, if you please."—"For where?" asked the employee.—"is that any of your business?" answered mademoiselle, indignantly, remembering her mother's advice.

Chowder got a good dinner at home a few days ago by telling his wife that he was going to bring a judge home with him to that meal. When he arrived, alone, and Mrs. Chowder asked him where the judge was, he triumphantly pointed to himself, remarking: "I'm a good judge of a dinner." He will be obliged to get a dinner in some other way hereafter.

A little five year-old girl of this city, who is receiving a kindergarten course in object lessons, was told by her teacher that the camel had four stomachs. Examining the block representation of this beast of the desert a moment, to decide where he carried them all, the little one pointed to the hump and exclaimed, "Oh, mamma, and there's where he keeps them, don't he?"

One of those characteristic Nevada stories is thus briefly told by the *Virginia Enterprise*: "Yesterday, during the gale, while boulders as big as pumpkins were flying through the air, and water-pipes were being ripped out of the ground, an old Chinaman, with spectacles on his nose, was observed in the eastern part of the town, seated on a knoll, calmly flying his kite—an iron shutter, with a log-chain for a tail!"



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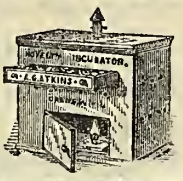

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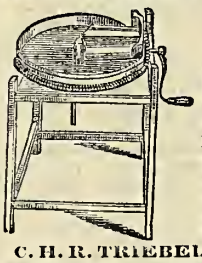

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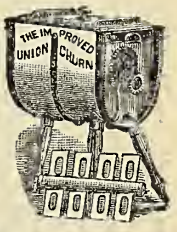

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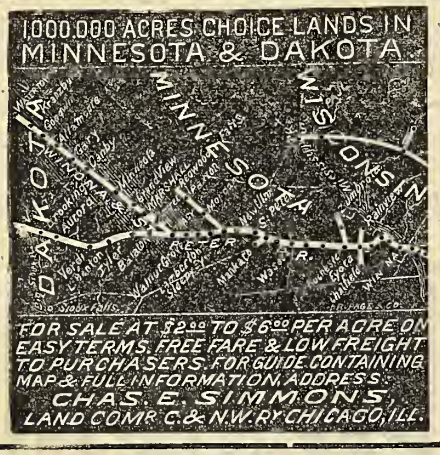

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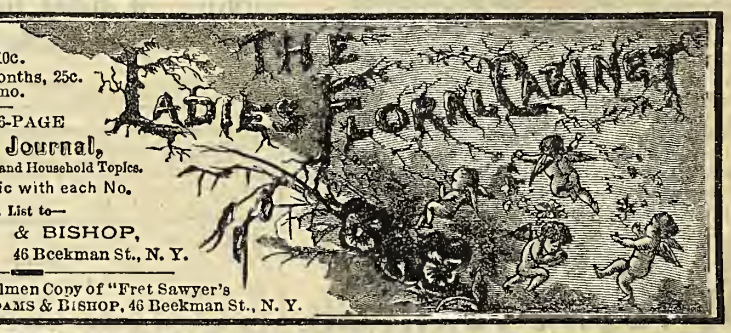

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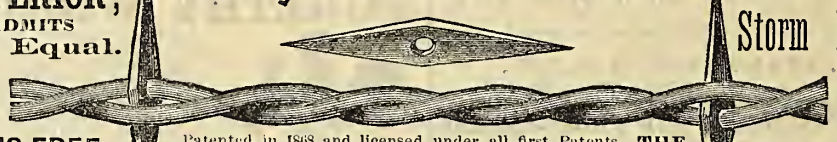

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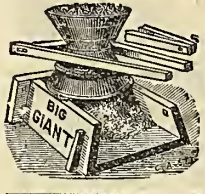

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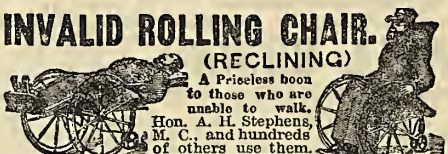

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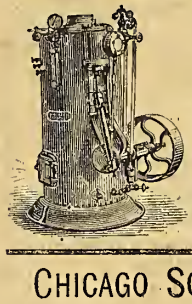

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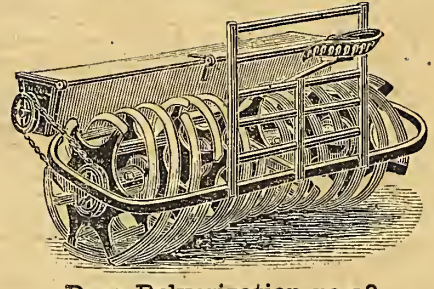

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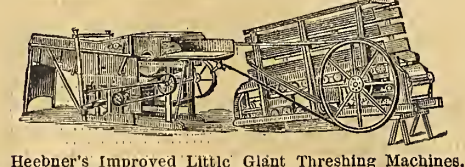

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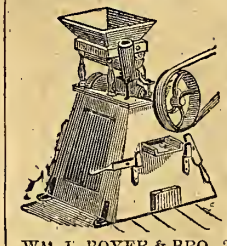

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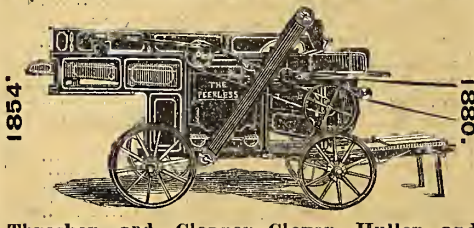

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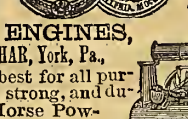

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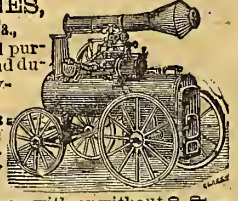

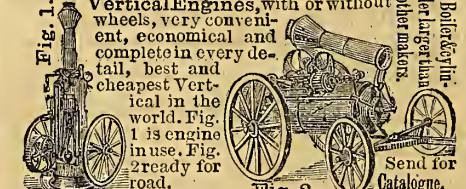

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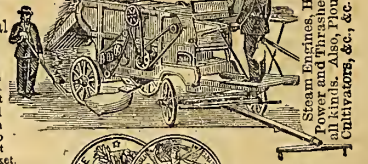

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SUPPLEMENT TO

SEPTEMBER, 1880.

AMERICAN AGRICULTURIST PREMIUM LIST.

VOL. XXXIX. NUMBER 9.

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American Agriculturist.

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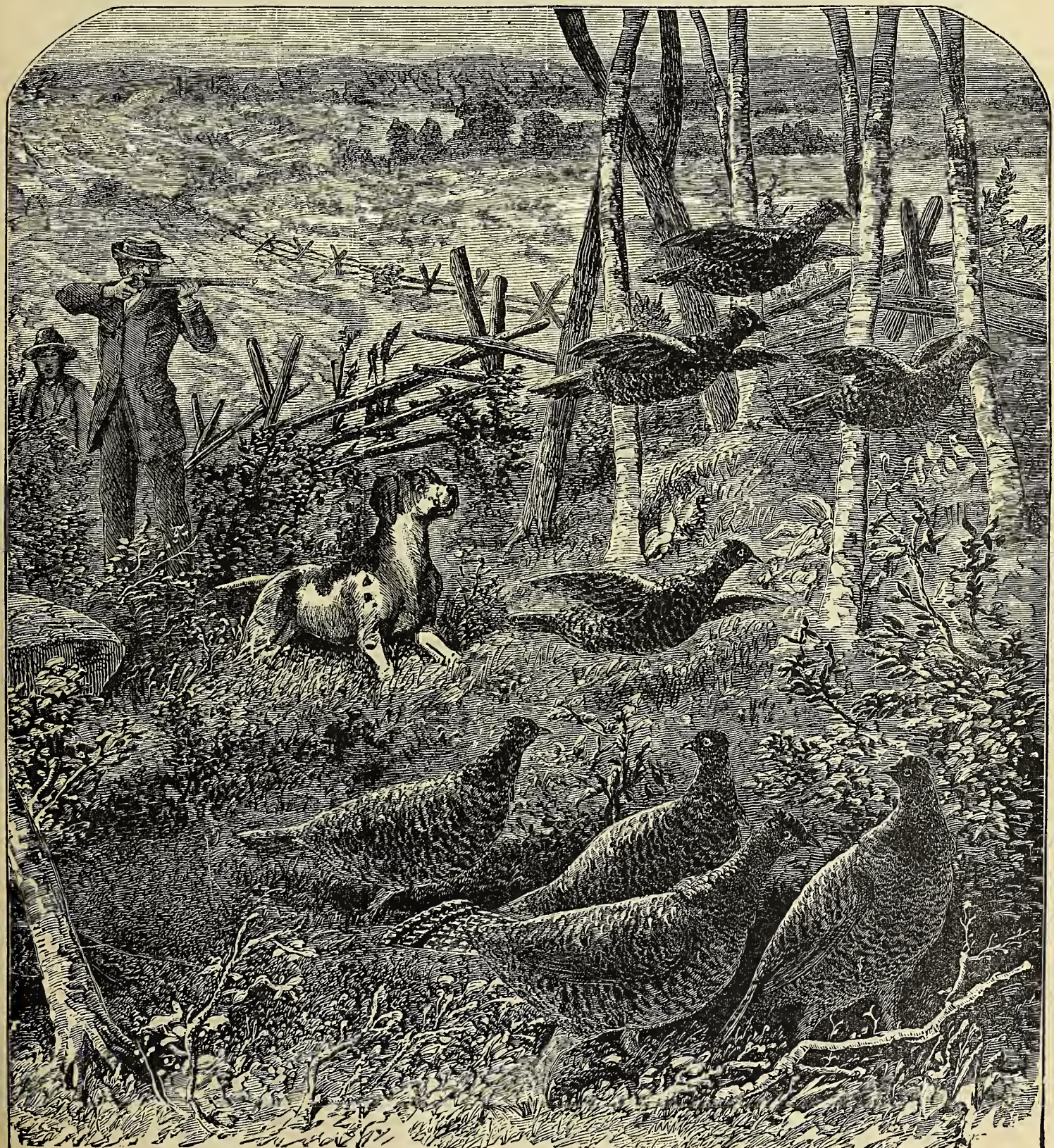
SUPPLEMENT TO SEPTEMBER, 1880.



GROUSE OR PARTRIDGE SHOOTING.

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The American Agriculturist.

The *American Agriculturist* was established in 1842, or thirty-eight years ago. The first number was issued under the editorial supervision of Mr. A. B. Allen. The original office was located in the basement of a building which stood on the present site of the *Times* edifice. Subsequently the paper had several publishers—including, amoug others, Saxton & Co., and likewise several assistant editors, including Solon Robinson. The office changed from one place to another until it was finally located at 189 Water street, nearly opposite to the United States Hotel.

In 1853, Mr. Allen called to the editorial chair Mr. Orange Judd, whose training he thought specially fitted him for the place. The latter had been reared on a farm, and, after graduating from college, had devoted some years to the study of the Science of Agriculture at YaleCollegc with Silliman, Norton, Johnson, Weld, and others. In 1856 Mr. Judd purchased the paper, and subsequently associated others with him in the ownership and editorial management. The following rules of action were laid down for its condnet:

1st.—To make every line RELIABLE.

2d.—To get the BEST reading matter at any expense of time, labor, and money.

3d.—To engage upon the Editorial staff the best men to be found iu the couutry, those of practical experience and wide information.

4th.—To always look after the wants and circumstances of those struggling with limited mcans.

5th.—To exclude from its business pages all advertisements of quackery, medicines, and unreliable advertisers.

6th.—To make the paper known to the whole country, and adapt its pages to all sections.

7th.—To make its teachings PLAIN and PRACTICAL as well as reliable.

From this time forward the circnlation of the paper increased with great rapidity, and, compelled to seek more commodious apartments, it removed (1859) to spacious quarters extending through from Park Row to Nassau Street. New subscribers continued to pour in from all quarters, and it was not long before the *American Agriculturist* subscription books embraced names from nearly every Post-Office in the United States. Since that period the regular circulation of the *American Agriculturist* has often heen above 100,000, sometimes running up to nearly 150,000. In 1867 the paper moved to its present site—the six-story building at 245 Broadway—which was purchased and specially fitted up at large expense to meet the growing wants and requirements of the establishment. During the past twenty years the *American Agriculturist* has absorbed, by purchase and otherwise, some twenty other journals of a similar character throughout the United States. This unexampled prosperity has been due to rigid adherence to the rules referred to above. It has always been the aim of the paper to secure the very ablest talent in the country, and, though issued only twelve times a year, the annual editorial expenses have been larger than those of many metropolitan dailies.

Eighteen years ago, Dr. George Thurher, who is one of the highest authorities in botany and horticulture and has no superior in general departments of knowledge, became associated with Mr. Judd in the editorial supervision of the paper, and they continue in that relation at the present time.

The illustrations have heen a leading feature of the *American Agriculturist*, and no expense has been spared to secure the very best. Many hundred thousands of dollars havc been expcnded in this manner for the benefit of the readers.

Another feature which has spccially commended itself to the public, and which is still prominently maintained, is the exposure of Humbugs and fraudulent schemes of all descriptions. Thousands of grateful letters from thosc who would otherwise have suffered, bear witness to the value and importance of these exposures. For other leading features, we refer the reading puhlic to the paper itself.

Continuing under the same auspices, with strong young mcn traiuing to the work, it may be safely predicted that, as grand and successful as has been its career in the past, and as high as its standard is to-day in circulation and influence, not only throughout our own country, but in other lands, the *American Agriculturist* is only entering the gateway of a still wider field of circulation, and of useful work and influence.

The Amerikanischer Agriculturist.

The *Amerikanischer Agriculturist* was established in 1858, twenty-two years ago. It has had all the advantage of the machinery and expense employed in the preparation of the *American Agriculturist*, and the writers are thoroughly familiar with the wants and requirements of German farmers, gardeners, fruit growers, etc., in the United States. Professor Charles Munch, of Missouri, whose name is well known wherever the German tongue is spoken, has for years had control of departments in the paper especially adapted to his countrymen, and it has given such satisfaction that the German *Agriculturist* is now largely read in the Fatherland. One class there take the paper because of the practical hints and suggestions. Another class, who contemplate emigrating to the United States, subscribe in advance to the *Amerikanischer Agriculturist*, in order to acquire knowledge and information regarding the climate, soil, and agricultural features generally of the new country to which they are going. It likewise has subscribers in Russia, Norway, Sweden, and through all Europe. Those in this country having relatives and friends in the old world, who are preparing to emigrate hither and settle on farms, cannot do them a greater serviee than in sending them the *Amerikanischer Agriculturist*, for preparation prior to their departure. Like the *American Agriculturist*, the *Amerikanischer Agriculturist* has successfully gone forward, while other similar papers have succumhed, until it is now, with one exception, the only purely German agricultural journal puhlished in the United States. It is furnished at the same low rate as the *American Agriculturist*, viz., $1.50 per year, postage prepaid.

Why they Do Not Stay on the Farm.

There is no denying it; the boys do not stay upon the farm, and will not unless some constraint is put upon them. Why is it? There are many causes operating to this end; the new land in the west, the adventure of mining life in the mountains, the new fields open in the cotton helt, speculation and business in the neighboring village or city—but above all these is the social leanness and starvation of American agricultural life. We are speaking now of the isolated farming districts, from five to ten miles from the market town. Here is the old style school house, and the means of education are just as they were fifty years ago or more; the winter school of four months, taught by master, and summer school of three, taught by mistress, both hired at cheapest rates, and some are still "boarding round." The old church is yet there for Sunday gatherings, and church and school are about the only occasions of soeial life known to old and young, except in rare visits to other communities. The main thing is work, early and latc, summer and winter; and the chief problem for the hrain to solve is how to get a living. The whole population is not so much engaged in living, and in enjoying life, as in getting ready to live. If we look in-doors there is rather a lean larder the year round. Salt junk and potatoes are the main stay. The body is not well provided for. The search for a soft bed is not well rewarded. The intellectual life is more poorly fed. Often no paper at all is taken. If one is afforded, it is likely to be a political journal. Agricultural papers are the rare exception. There is little but gossip for the mind to feed upon. The school is often neglected because the boys and girls are wanted at home. The ehurch is neglected because it is not convenient to go to meeting. The horse sheds are not built, the horse is lame, the carriage has a broken spring, or, more likely, the preacher gives out too much light for the surrounding darkness. Bats love twilight. The muscles are overtaxed, and vitality is mainly occupied in sustaining the waste of muscle. There is no time for recalling the daily news, for discussing agricultural topics even, or for the enjoyment of social life at the table. Father and mother live under pressure all the while. Hearty sympathetic interest in anything outside of the farm, is almost unknown. Smiles are few, and jokes still fewer. Young America on the farm revolts against this eternal round of solemn facts. He wants a little variety in his diet for his hody, and for the mind. He has seen agricultural papers with pictures of fine horses and cattle, houses, and harns, labor-saving machines, and tools. He would like to read ahout these things, and realize the pictures. He wants more papers and books, lyceums, lectures, and especially more soeiety. He wants to enjoy life a little while he is young, and not to wait for gray hairs before he begins to live.—Here is the cause of our waning agriculture and deserted farms. The remedy is more easily seen than applied. We must have more living while we are getting ready to live.

Business Habits for Farmers.

There is probably not one farmer in ten thousand who keeps a set of accounts from which he can at any moment learn the eost of anything he may have produced, or even the cost of his real property. A very few farmers who have been brought up to business habits keep such accounts, and are able to tell how their affairs progress, what each crop, each kind of stock, or each animal has cost, and what each produces. Knowing these points a farmer can, to a very great extent, properly decide what crops he will grow, and what kind of stock he will keep. He will thus he able to apply his labor and money where it will do the most good. He can weed out his stock and retain only sueh animals as may be kept with profit. For the want of such knowledgc, farmers continue, year after year, to feed cows that are unprofitahle, and frequently sell for less than her value one that is the best of the herd, because she is not known to be any hetter than the rest. Feed is also wasted upon ill-bred stock, the keep of which costs three or four times that of well-hred animals, which, as has been proved by figures that cannot be mistaken, pay a large profit on their keeping. For want of knowing what they cost, poor crops are raised year by year at an actual loss, provided the farmer's labor, at the rates current for common labor, were charged agaiust them. To learn that he has been working for 50 ccnts a day, during a number of years, while he has been paying his help twicc as much, would opeu the eyes of many a farmer who has actually been doing this, and it would convince him that there is some value in figures and book accounts.

Farm Villages.

There is no necessity that farmers should be isolated so much as they generally are, nor any need that the farm huildings should be in the center of each farm. It is simply a matter of figures and calculation, as to whether the saving of a few hours' labor—or a few days in the aggregate—yearly, in hauling the crops to the harn, with the barn and house in the center of the farm, and a mile away from the nearest neighbor, is of more valne or more convenient than to have one's neighbors closer and one's fields farther off. There are many advantages in having three or four homesteads contiguous and forming a hamlet, or with a few tenant houses or eottages, a small village. This is especially desirable in the West, where the land was originally so divided that four farms necessarily meet at one corner, where two roads cross. Where farms are 160 acres in extent, there wonld then be four houses together at every mile; four sets of farm buildings; four orchards, and four plantations, which would condense the shelter provided by these, and make it much more effeetive than when scattered half-a-mile apart. There would he far better social opportunitics than farmers now enjoy, and many more opportunities for combining labor and capital in joint enterprises.

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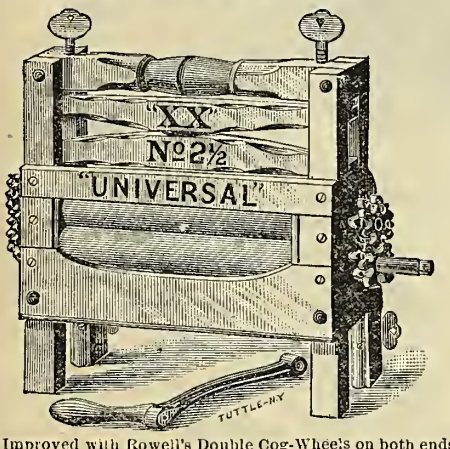

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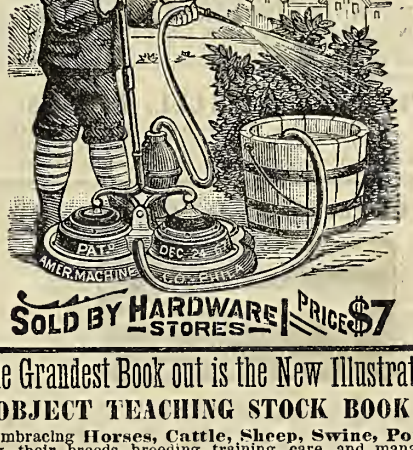

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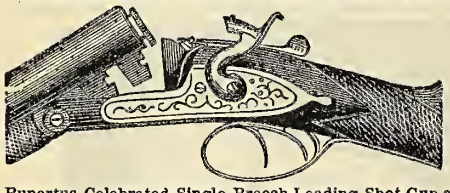

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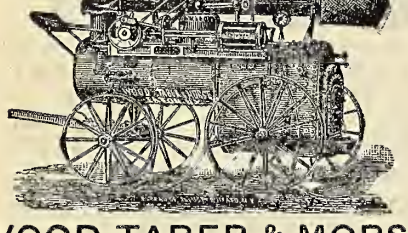

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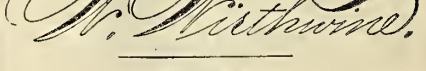
Present Style: 

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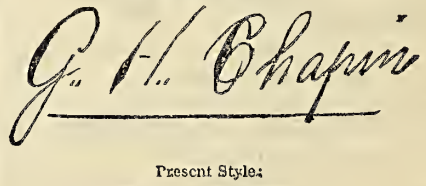
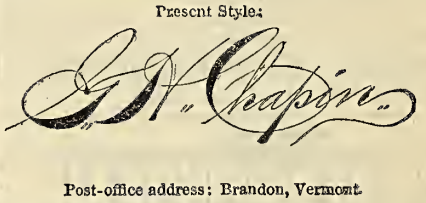
Former Style: 

Present Style: 

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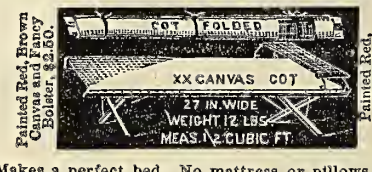

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Every Article offered on the following pages is of the best Quality, *guaranteed to be just as described.* Every thing is New from the Manufacturers—no second-hand, or shop-worn, or unsalable article is offered. These facts will make it all the more desirable to secure them, as there will be no risk or fear of deception or of defect in the quality or character.

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The Premium List may look familiar to old subscribers, because it contains all the old premiums we could arrange for, which were largely called for and approved last year and are therefore likely to be wanted by others. But many NEW and desirable articles are scattered all through the following pages, whereever the printer has found it most convenient to arrange them in making up the columns.

Carefully Preserve This Premium Sheet for future reference. The Offers go into effect Sept. 1, 1880, and extend to June 30, 1881.

Who Can Get Premiums.

☞ **PLEASE TAKE NOTICE** that no premium is offered to any one as an inducement to become a subscriber. If the *American Agriculturist* is not good enough and cheap enough—does not contain useful information enough in its reading pages, its many hundreds of engravings, its trustworthy business pages—to be worth its small subscription price, DON'T TAKE IT.

Those Subscribers who are in no premium list, are, as members of the family, so to speak, given an opportunity to get some Premium articles at lower rates than "outsiders," as noted on p. 378.

The Premiums are offered as *remuneration* for time, or effort, used in making the *American Agriculturist* known to *others*, inviting them to subscribe, in receiving and forwarding new single subscriptions, or collecting clubs of subscribers, old or new. It is supposed that any one doing this is himself a subscriber, except in the case of dealers. **BUT** any one may include his own name in a club of *two or more* names for a Premium.—(It is hardly "on the square" for one to drop his own subscription, and send in the name of another member of his family, or other person, as a *new* name.)

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during two or three months. Any enterprising man, without lessening his public (or political) duties, may keep quietly picking up names of subscribers, and thus get from our premium list something valuable to show (or use, or sell) after the "smoke of battle" in politics clears away. **Begin to-day.** (See "Extra Long Year," p. 378.)

To Strangers.

The *American Agriculturist* (so called because started in **1842**, as a Rural Journal) has been greatly enlarged, and widened in scope, without change of name, until it now meets the wants of ALL classes, in City, Village, and Country; it is literally **EVERYBODY'S PAPER.** It helps the **FARMER**, the **GARDENER**, the **FRUIT GROWER**, the **MECHANIC**, the **PROFESSIONAL** and **BUSINESS** man; it greatly aids every **HOUSE-KEEPER**; it pleases and *instructs* the **YOUTH** and the **LITTLE ONES.**

It is edited with **great care,** labor, and expense, to have every line *reliable*, while its pages abound in a great variety of **useful,** *practical, reliable* information and suggestions.

Every number contains **40** or more large pages, well printed on fine paper, besides a Tinted Cover *newly* Illustrated on each number.

Every number contains from **60** to **100** NEW **Engravings,** describing a great variety of Labor-saving, Labor-helping devices and Household Economies, Animals, Plants, Flowers, with many Pleasing Pictures, etc. In this respect it *surpasses, by far, all other like journals, and is wanted by every one, in Country, Village, and City, no matter how many other journals one may have.*

Its constant **Exposures** of **Humbugs** and Swindling Schemes are invaluable everywhere, and save many times its cost to almost every reader. It admits no medical advertisements, and no untrustworthy advertisers. Its immense circulation enables the Publishers to issue it at very low rates, and to deal liberally with subscribers in the way of premiums, etc. Taking into account its size, its reliability, its beauty, its REAL VALUE, it is the CHEAPEST JOURNAL IN THE WORLD!

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Some who have not looked into it, imagine that premiums are given to make the paper itself more attractive; *or* that expense for premiums lessens the value of the paper itself. *Nothing of the kind, but quite otherwise,* as witness:

Most active business enterprises, publishing included, employ agents or retail dealers at different points to carry on and extend the business, and pay them by commissions or reductions in prices. The Publishers of the *American Agriculturist* merely follow the general custom in their own way. It is very *convenient to the subscribers themselves,* as well as to the publishers, to have one or more persons in each locality who will receive and forward subscriptions and solicit new names.

But this Journal circulates so extensively, and the profits on individual subscriptions are so small, that a system of agencies is impracticable; the Publishers therefore invite *everybody* so disposed to act as voluntary agents in gathering and forwarding the subscriptions of both old and *new* readers. As a return for such friendly aid, they now, as for over 20 years past, offer a list of *good Premium Articles, Books,* etc., simply as rewards or remuneration to those who voluntarily give any time or attention to promoting the interests or circulation of the *American Agriculturist.* These Premium Articles are *just as good as money,* for *use,* or for *sale* even, while, by special facilities, by large cash and wholesale purchases, by advertising arrangements, etc., the Publishers are able to offer in these articles *much higher rewards* than they could in money.

☞ The money paid for these premiums comes from advertising receipts, which are increased by the larger circulation obtained through premium-giving. Much extra advertising comes through the extra premium sheet itself; in fact, the paper is better and cheaper *because of the premium enterprise.*

Some Good Advertisements will be found on pages **375** and **376**, also on pages **405** to **412**, and on three cover pages, which will be worth looking through *for information.* This Journal excludes all medical and all unreliable advertisements and advertisers. We aim to admit only those who have both the *ability* and *intention* to do just as they promise. When writing to our Advertisers, please inform them *where* you saw their announcements.

It is Important to

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1st. Send subscriptions as fast as gathered (with the exact money), that the Subscribers may begin to receive the Journal at once, and take your own time to complete your list and select your premiums. You can have all the time desired up *to* July, 1881. In sending names for a premium club, state the fact, and they will be entered to your credit in a special Premium Record. You can close your list and call for your premiums at *any* time previous to July 1, 1881.....**2d.** Old and new subscribers all count in Premium Clubs of *two or more names*, but a portion at least should be *new* names; it is partly to get these that we offer premiums to canvassers....**3d.** Premium clubs may be from any number of different Post-Offices, if all are gathered and sent by the same person. Clubs may consist of *English* or *German* subscriptions, or both....**4th.** A Specimen Number will be supplied free, when *needed* for canvassing, but extra numbers are expensive, and should be used carefully and economically, and where they will *tell*. Other specimen numbers will be sent, post-paid, *to canvassers only*, on receipt of six cents for each copy desired. The regular price is 15 cents per number.

Get Premium Names Anywhere.—As above noted (3), names for Premium Clubs can be gathered from any number of post-offices, and the papers will be mailed to each subscriber's address—but the names for any Premium Club must all be sent in by the person who collects them.

☞ **Subscriptions Count ONLY in One Premium List.** — Of course *no* subscription can count more than once for any premiums; or be counted for *any* premium, when articles or Books are taken *with* subscriptions, at lower prices, as offered in 3d column of this page.

Delivering the Premiums.—All mailable premium articles will be delivered free at the Office, 245 Broadway, or be forwarded by mail, post-paid, to any part of the United States and Territories when no postage is specified, or on receipt of the postage *when* any amount is stated. Unmailable articles will be forwarded by freight, express, or otherwise, as desired by each recipient, the carriage to be paid by the recipient. The exclusion of some articles from foreign mails, and the varying duties or Custom charges upon others, preclude any general rule for foreign lands. **To British America,** (except Newfoundland,) the postage to be prepaid on Mailable Premiums is 10 cents on each parcel, and nothing over 8 ounces can be mailed. Newfoundland postage is the same as to Postal Union foreign lands. We will make all possible efforts to accommodate our foreign readers.

Foreign Subscription Rates.—The Subscription Rates of the *American Agriculturist* (English or German editions) are the same *everywhere*, EXCEPT that 18 cents per year additional for the extra postage is required when this Journal is mailed *outside* of the United States or the Canadas. With this exception, and the matter of *delivery* noted above, the Premium offers are universal to all countries embraced in the Postal Union.

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The Prices of Premiums, as given, are the lowest regular standard rates established by the manufacturers and dealers. These prices are frequently lower than similar articles of *the same good quality* are sold for in many places.

How to Send Money.—Send money by Postal Money Order, or by Checks or Drafts on New York Banks or Bankers, payable to order of Orange Judd Company. If neither of these is obtainable, send the money by Register Letter, affixing stamps both for the postage and registry.

Large Pay for Little Work.

One subscriber obtained each day (or evening, without loss of time), is 25 a month, and that will bring the reward of *good* articles from the premium list, *worth* **$25.00** either for use or sale, or $25.00 in good Books, or several smaller articles, worth together $25.00, when subscriptions are sent at full rates ($1.50 a year). There are few places where there not at least 25 persons who would be much benefited by reading the *American Agriculturist*, and who would take it if shown its real value. In many single towns there are from fifty to twelve hundred subscribers, and premium clubs need not be confined to one town or post-office.

A CAPITAL BUSINESS.—While every subscriber can collect, in his own vicinity, two, five, ten, twenty, up to one hundred or more premium names, *as many have done, many others* can pursue canvassing as a good and profitable *Business*, receive the premium articles, and sell them for cash, as they are all good, popular, and readily salable. This has been done with great profit in years past. Some make poor work at first, but by perseverance and learning how to do it, they become expert and highly successful. The most successful canvasser in this way is a Lady who has thus secured an income larger than is obtained by most farmers or professional men. ☞We employ *no* "Agents," and issue *no* certificates, but any one can canvass where he is known, and if desiring to go into neighboring towns can, if himself trustworthy, get any needed endorsements from persons well known in his own section of country.

☞ Extra Long Year,

Beginning To-day!—To help all our friends to *immediate* success in securing valuable Premium articles, we make the following offer:

Every *new* subscriber for **1881** received after Sept. 1st, 1880, will be entered *at once* upon our mail books, and receive, **without charge,** the numbers issued in 1880 after his name arrives.

(Subscribers received in September, 1880, get the paper **15 months** for a year's payment; in October, 14 months; in November, 13 months.—)

☞ This offer is to **ALL NEW** subscribers for 1881, in premium clubs or otherwise. So the forming of premium clubs can **Begin at Once.**—The extra copies offered will be a special incentive to *new* subscribers. Old subscribers need no inducement, and they will renew now for next year, as well as later, and thus help swell the premium club.

BEGIN AT ONCE.

While the Premiums are for volume **40** (*all of* 1881), *the collecting of names can be best begun* **at once.** *For strong Reasons see item* "☞**Extra Long Year.**" ☞*Fairs, Political Gatherings, evening visits, correspondence with friends, etc., can all be used advantageously in collecting names.*

Articles Wanted at a Definite Time, for Premiums or otherwise, should be secured long enough *in advance* to allow for accidental delays in transportation, etc. REMEMBER: that, as the Holidays approach, there will be an immense pressure upon manufacturers and dealers; also upon Express and Railway Companies. Also: that when any articles happen to be in large popular demand, the stock manufactured may sometimes be temporarily exhausted. When we know *in advance* just what is wanted, we can have it ready. Usually they will be sent promptly when called for.

A GENERAL PREMIUM (For Subscribers at Club Rates).—In the Descriptions, each premium is offered for a stated number of subscribers at the regular single subscription price of $1.50 each. **BUT,** *First:* Any one sending in from **ten** to **fifty** subscriptions at the lowest large Club rate, may select any Premium Articles or Books desired, to the amount of **12 cents** for each name sent at $1 a year. (No names will be received at this rate unless at *least ten* are sent by the same person.)——**Second:** Any one sending **above 50** such names (at $1.00 each) may select premium articles or books to the amount of **15 cents** for each name. (No combination of lists or transferring of names to other lists will be allowed under these two offers.)

PREMIUMS and BOOKS

FOR

ALL Subscribers (Old or New,)

AT REDUCED PRICES.

To accommodate our friends sending in their own renewals or new subscribers for 1881, *when such subscriptions are on no premium list*, we make the offers below, which will give to *every one* desiring it some advantage from the premium list.

(The mode of delivery and postage, when any postage is required, is stated with each premium. For Book Postage, see Delivery of Books, page 380.)

N. B.—Special.—*All* NEW *subscribers for* 1881 *under the following offers, received in Sept., Oct., or Nov.,* 1880, *will have all numbers for* 1880 *issued after they come to hand,* **without extra charge.**

$1.75 will pay for
The *American Agriculturist* to the end of 1881, and also any Premium Article or BOOK described, whose price does not exceed.....**50 cents.**

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The *American Agriculturist* to the end of 1881, and also any Premium Articles or BOOKS described, whose price does not exceed.....**90 cents.**

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Subscriptions for **English** or **German** Editions are at the same rates, and count alike for Premiums, together or separately.

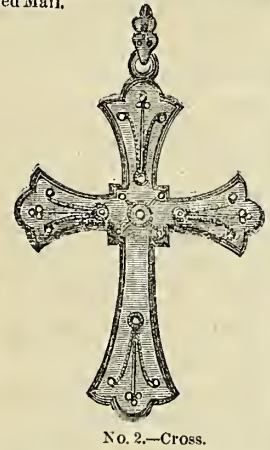
THE PREMIUMS.

GOLD and SILVER.

Nos. 1 to 13.—Genuine Gold and Silver.—Beautiful Presents.—The old establishment of Benedict Brothers, 171 Broadway, N. Y., has long been most favorably known as trustworthy dealers, not only in Watches ("Benedict's Time" has become a household word throughout the country), but also in a large variety of Diamonds and *genuine* Gold and Silver articles (they deal in no others), from the smallest Gold Ring to the most costly Jewelry of all descriptions. To meet the wishes of our subscribers desiring genuine sol id Gold and Silver articles, of *guaranteed quality*, for use, or for holiday, or wedding, or other presents, we select those named below. They are furnished to us by Messrs. Benedict Brothers, an ample guarantee as to their quality. The prices named are the lowest at which they can be supplied by any dealer. The Gold articles 14 carat fine and upwards (no Jewelry, to *wear* well, is over 14 carats.) They are late beautiful patterns:

No. 1.—Cold Locket, exactly the size of engraving—solid 14-carat gold, richly engraved and very finely enameled. Arranged for two pictures, under glass. Suitable for Lady or Gentleman. Price $10.25. We will present it for *Thirteen* subscribers at $1.50 each, and send it paid by Registered Mail.

No. 1.—Locket.



No. 2.—Cross.

No. 2.—Roman Gold Cross.—Solid 14-carat gold. Beautifully beveled edges. Ornamented with Etruscan work. Exact size shown by engraving. Price $8.75. This will be presented for *Eleven* subscribers at $1.50 each, and sent in Registered Mail post-paid.

No. 3.—Watch Charm—Of 14-carat solid gold. This is a beautiful shrill-toned Whistle. Price, $3.00. This will be presented post-paid for 4 subscriptions at $1.50 each.

No. 3.

No. 4.—Compass Charm.—A very useful as well as ornamental Watch Charm. 14-carat gold case, with strong glass front, with accurate and sensitive needle. Price, $5.75. We present it for *Seven* subscriptions at $1.50 each. [Mailed free and Registered].

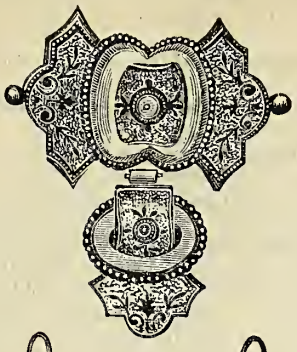
No. 4. Watch Charm.

No. 5.—Shawl or Lace Pin.

No. 5.—Shawl or Lace Pin.—This is solid Roman gold, 14-carat, richly ornamented with bright raised work; very fashionable now. Price $7.25. Presented for *Nine* subscribers at $1.50 each (Registered).

No. 6.—Sash Pin.—(Is also called Bib or Baby Pin.) Same quality and workmanship as the Lace Pin above; solid 14-carat gold. The price is $3.00. Presented and sent in Registered Mail for *Four* subscriptions at $1.50 each.

No. 6.—Sash Pin.



No. 7.—Ladies' Gold Set—Brooch and Ear-Rings.—The engraving faintly shows the beauty of the pattern, but gives the exact size. They are of solid 14-carat gold, of the best workmanship, finely enameled and ornamented with pearls. The Brooch has the improved catch or hook at the back for attaching a watch-chain when desired. This is the most acceptable set we have seen for the cost of $17.00. We will send this Set for a club of *Eighteen* subscribers at $1.50 each. (If desired we will present the Brooch separately for eleven subscriptions at $1.50 each [or supply it for $9.00] —or the Ear-rings for ten subscriptions [or for $8.00].— Note that these are not the common 5 to 10-carat gold, often sold, but of the best 14-carat quality, made by first class Jewelers. This applies to all gold articles, Nos. 1-13.

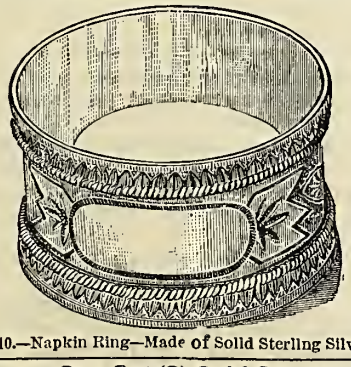
No. 8.—Seal Ring.—Solid 14-carat gold, richly engraved Shank, with fine Bloodstone, or with *any* colored or of *Onyx* the recipient may prefer. Send exact size of finger by an old cheap ring, or bent wire, or a hole cut in a card. Price $8.50. We will present this choice Ring for *Eleven* subscriptions at $1.50 each, and send it free in Registered Mail.—A very Beautiful Present.

No. 8.—Seal Ring.

No. 9.—Band Ring.

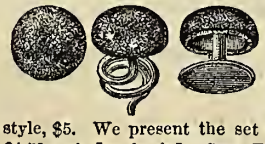
No. 9.—Band Ring.—Solid 14-carat gold, richly engraved, as partly indicated in the cut. (Send *size* wanted, as above.) Price $4. Presented for *Six* subscribers at $1.50 each. [Sent Registered by mail.]

No. 10.—Napkin Ring, of solid *Sterling* Silver, (eight per cent purer than coin), are heavy and richly engraved. Size and pattern shown in cut. A beautiful present. Price $3.00. Sent post-paid, for *Four* subscriptions at $1.50 each [or for $3.00.]

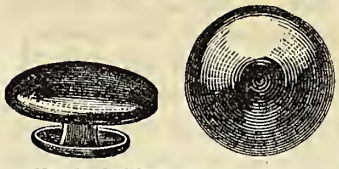


No. 10.—Napkin Ring—Made of Solid Sterling Silver.

No. 11.—One Set (3) Gold Studs.—14-carat, solid; either spiral or button backs indicated in engraving, as desired. A choice given of either polished or Roman gold. Price of *three*, in either style, $5. We present the set (3) for 7 subscriptions at $1.50 each [or for $5]. Sent Registered and post-paid.



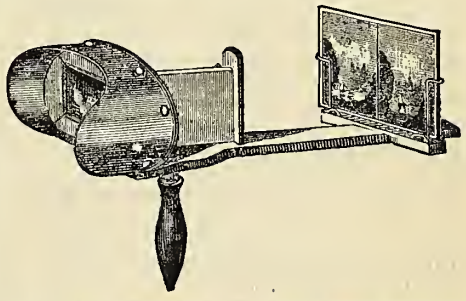
No. 12.—Pair Gold Cuff Buttons.—Solid 14-carat. The size is shown in the engraving. Your choice of either plain Roman or polished gold. Price $8. We will present a pair of these for *Ten* subscriptions at $1.50 each, sending them Registered and prepaid to any point.



No. 12.—Cuff Buttons—[¾-inch].

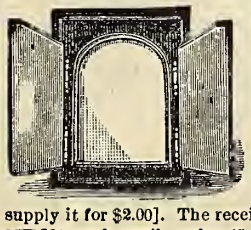
No. 13.—Collar Button.—Solid 14-carat gold. You can have your choice of either Roman or polished gold. Price, $2.50. Presented for *Four* subscriptions, at $1.50 each. [Mailed post-paid.]

No. 14.—Coral Jewelry.—We have made arrangements with the well known house of Messrs. Hall, Nicoll & Granbery, Nos. 20 and 22 John Street, New York, for the supply of sets of this very beautiful jewelry. Owing to the fact that Coral Jewelry is handmade, there are no two sets alike, and it would be impracticable to give illustrations of many of them. The above is an engraving of a selected specimen, which is composed of leaves and flowers, of fine color and carving; while others are made of fine-cut coral beads. The selection would of necessity have to be left with us, after the price of the Premium had been determined, unless the person securing it were here to select for himself. We can supply the sets as Premiums as follows: Coral Set, consisting of Brooch and Ear Rings. Price, $2.50. *Four* subscriptions at $1.50 each, will secure this. Coral Set larger and handsomer, Price, $7.50, which 9 subscriptions at $1.50 each, will secure. Coral Set cut in Flower Patterns (in satin-lined box), Price, $11.50, which 13 subscriptions at $1.50 each, will secure. Coral Set cut in Flower Patterns (in satin-lined box), Price, $16.50, which 19 subscriptions at $1.50 each, will secure. [Or we will supply either of the sets at the prices named.] All sent post-paid.



No. 15.—Stereoscope and Five Views.—These instruments afford great pleasure to both old and young in any home. The one we offer is of satin wood frame, with Hood, and will be accompanied by five interesting views. Supplied to us by Willy Wallach, 36 Park Row, N. Y. (Other views can be purchased of us at ten cents each.) *Four* subscriptions at $1.50 each will secure this. [Or we will supply one, with five views, for $2.75.]—Expressage to be paid by receiver in either case.

No. 16.—Cabinet Photograph Frame.—It is made of colored silk velvet, with nickel-plated moulding, door-hinges and knobs the same, suitable for an Imperial-size Photograph. Size, 8¼ × 6¼ inches, and very handsome. From Stirn & Lyon, 20 Park Place, N. Y. Price, $1.50. *Three* subscriptions at $1.50 each will secure it [or we will supply it for $2.00]. The receiver to pay expressage.



☞ If to go by mail, send us 15 cents for postage & packing.

GOOD BOOKS

For all Classes and all Ages.

PREMIUM OFFERS:—*To those procuring and sending one to three NEW Subscribers, or clubs of four or more new and old Subscribers to the American Agriculturist, at the regular Rates of* $1.50 *each, we will PRESENT any of the Books described on this and on the next two pages,* **as follows:**

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For *One*	Subscriber, Books to the amount of	$0.50
For *Two*	Subscribers, Books to the amount of	$1.50
For *Three*	Subscribers, Books to the amount of	$2.25
For *Four*	Subscribers, Books to the amount of	$3.20
For *Five*	Subscribers, Books to the amount of	$4.10
For *Six*	Subscribers, Books to the amount of	$5.00

For **TEN Subscribers, Books to amount of**

TEN DOLLARS.

And another One Dollar's Worth, for EACH Subscription above Ten at $1.50—*if* they are collected and forwarded by the same person.

DELIVERY OF BOOKS.—All Books for Premiums or otherwise will be delivered at the office of the *American Agriculturist*, 245 Broadway; **OR** they will be packed and forwarded to any address, by express or otherwise, as may be desired, the receiver to pay the charges of carriage; **OR** they will be Mailed post-paid to any part of United States or British America, *if* the postage money be sent to us at the rate of 7 cents for each dollar's worth of Books. (Postage to *other* countries in the Postal Union costs about 14 cents on each dollar's worth. Recent British Books, republished here, cannot be sent to British countries.)

*** **N. B.**—*Aside from the above, any of the following Books will be forwarded, post-paid, on receipt of the price named for each.*

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The Undiscovered Country—By W. D. Howells. This novel is regarded as the greatest that Mr. Howells has ever written; it is in the fascinating style for which all of his writings are remarkable. Beautifully printed and tastefully bound, $1.50.

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Here is an opportunity, not only for individuals to obtain good books for themselves and families, *free*, but also for the **Farmers of a neighborhood to unite their efforts in raising a club of subscribers, and through these premiums get an Agricultural Library for the general use of all.** Let some enterprising, public-spirited farmer in *every neighborhood* start this matter, ask his neighbors to help make up a list, and thousands of such Libraries will be established all over the country, which, with the copies of the *Agriculturist* thus scattered, will have a wonderful influence in developing thought, increasing intelligence and awakening inquiry, and the increased *profit* resulting will be beyond estimate. Remember that by gathering a club of ten or more subscribers at $1.50 each, you get for yourself or your club, $10.00 worth of Good Books, and One Dollar's worth more for every such subscription over ten. An unprecedented opportunity to get a Library of $10, $20, $50, or even $100 worth, or more, of Good Books.

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the soil, who, from painful experience, can readily appreciate the losses which result from the scarcity of water at critical periods, as well as to those enterprising pioneers whose efforts are showing it to be possible to reclaim from sterility the so-called "Great American Desert." Fully Illustrated. Tinted paper. Cloth. $1.50.

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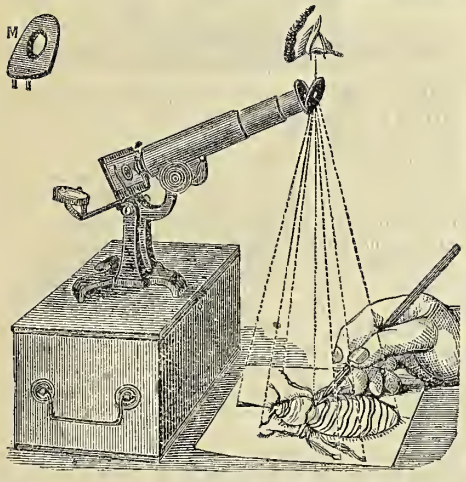

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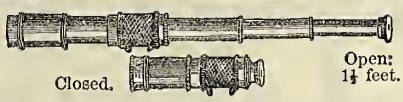

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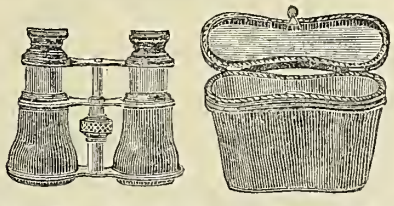

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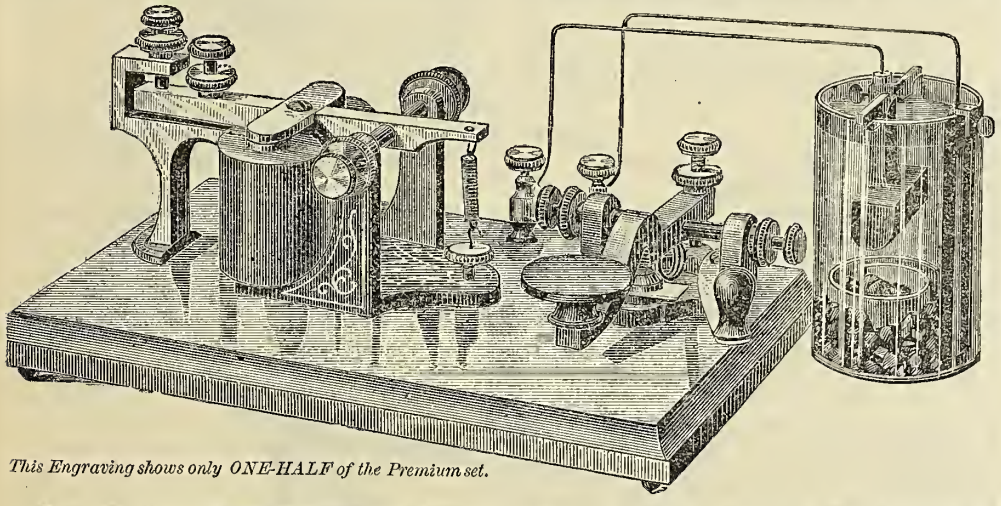

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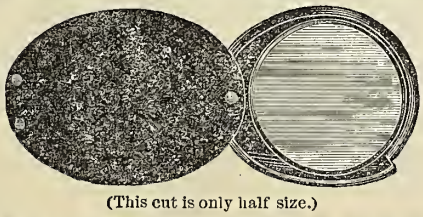
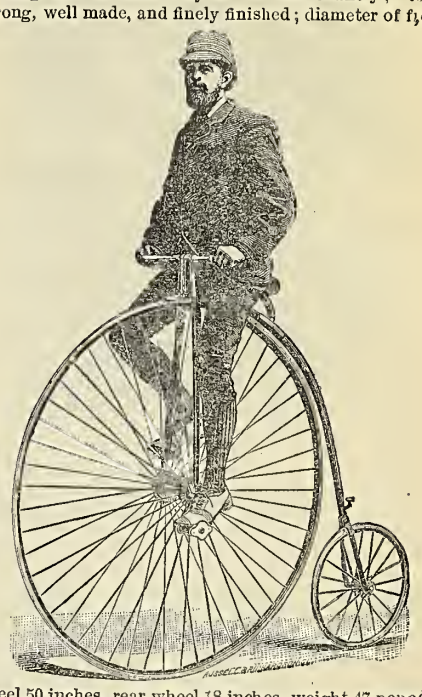
No. 18.—Complete Telegraph Apparatus for Learners and for Practical Use.—A *GRAND PREMIUM* for **Two** *Boys* or *Young Men*, or *anybody*—also for *young Ladies* wishing to learn Telegraphy. The use of the telegraph is extending everywhere. It is but little work to learn its simple language, and then two persons can hold instant communication over any distance, long or short. Every growing boy and girl may well learn this language. Messrs. L. G. TILLOTSON & Co., of 5 and 7 Dey St., New York, the celebrated largest manufacturers of Telegraph Instruments in this country, are now making very complete and perfect working Telegraph Instruments, (*see Engraving*), with Batteries, etc., at a price so low as to place them within the reach of all. It will cost but little to put them up between houses, business shops, dwellings, and stores, farm buildings, etc. We have arranged for the following most valuable PREMIUM SET. Two Boys or Young Men, in any neighborhood, by getting this *double set*, can connect their homes, (1 to 15 miles apart, if they wish), and talk with each other, and at the same time learn to be able to use any telegraph, at any time, **and anywhere. The complete Outfit will contain**



(This cut is only half size.)

No. 23.—Magnifying Glass, and Sun Glass.—Of excellent quality, made by the BAUSCH & LOMB OPTICAL CO.; very useful to magnify all ordinary objects, printed matter, needle-work, cloth, plants, flowers, etc., etc. Closes in a neat polished hard-rubber case for carrying in the pocket. It is also a good Sun or Burning-glass, concentrating the sun's rays to produce fire. Diameter of Lens, 1¼ inches. Sent, post-paid, for $1.20. *Presented* for *Two* subscribers at $1.50 each.

No. 24.—Columbia Bicycle.—This is the leading and favorite Bicycle in this country; it is strong, well made, and finely finished; diameter of front

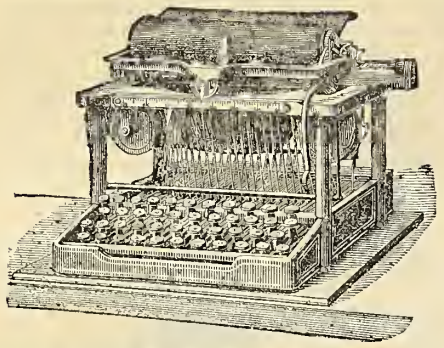


wheel 50 inches, rear wheel 18 inches, weight 47 pounds, and is supplied with Saddle Bag, Wrench, and Oiler. From the POPE MANUFACTURING Co., 101 Summer St., Boston, Mass. *Seventy* subscriptions at $1.50 each will secure this (or we will supply it for $70.) Receiver to pay expressage. It is a very superior Bicycle.

Nos. 25, 26.—Good Barometers are *very Useful to Everybody, now.* The recent improvement in weather observations enables one to readily know what the weather is likely to be many hours in advance, and such knowledge is of great value in caring for crops, animals, in planning work, etc. To almost every farmer, and to many others, a good Barometer will every year pay a very large interest on $100.—To meet this want, the Publishers have arranged to supply one of the most accurate, simple, desirable, and cheapest **Mercurial Barometers** to be found in the country—just as good for all practical purposes as one costing a hundred dollars, or more, viz.: *Woodruff's Patent Portable Barometer*, manufactured by Charles Wilder, Peterboro, N. H. We have tested Mr. Wilder's work for many years, and can confidently recommend the barometer to all. The Barometers offered are so portable that they can be sent to any distance safely. — *Description:* No. **25** is cased in finely finished, polished Black Walnut. Length, 3 feet; width of top and base, 4 inches: width of shaft, 2 inches; depth (thickness), 1¾ inch, with pedestal, 2½ inches deep; mounted with metallic plates, Vernier scale, *Thermometer*, and index. Glass door over the face. Price reduced to $12.—No. **26** is in neatly turned Case of maple or Cherry. Length, 40 inches; diameter of base and top, 2½ inches. Shaft slightly tapering, about 1¾ inch in diameter. Semi-circular glass face; mounted with metallic plates, Vernier scale, and *Thermometer*. Price reduced to $8.—These Barometers will be securely packed, and forwarded direct from the manufactory to any address. (The cost of carriage, which will be small, to be paid by receiver.)—We present **No. 25** for 13 subscribers, at $1.50 each; or **No. 26** for 10 subscribers.—[Or on receipt of the price we will forward either barometer]. Send to Mr. Wilder for a full description.

No. 25.

No. 26.

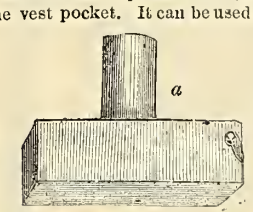


No. 27.—The Perfected Type-Writer. *Price Largely Reduced.*—One sits before a key-board, each key having a letter of the alphabet, or figure, or punctuation mark, and by simply touching the desired letters with the finger, the writing is done in regular plain printing, clear and distinct, and with great rapidity—on two or more sheets, if copies are desired for preservation. The paper moves along automatically with every letter touched. It is useful for all kinds of writing, letters, etc., etc. Every one should send to E. REMINGTON & SONS, 281 Broadway, N. Y., for a full description. We offer the No. 1 Type-Writer, price $80, complete, on table, etc., to any one sending us 80 subscriptions to the *American Agriculturist*, at $1.50 each, or we will supply one at the price named. Freight to be paid by recipient. ☞Two other styles of Type-Writers are made, as will be seen described in the circulars obtained from Remington & Sons. We will present either of the other Type-Writers for a proportionate number of subscribers. This instrument offers a far more promising means of obtaining a livelihood by a lady, than a Piano, or any other implement. Most of the letters of this office are now written on this machine. An experienced writer will *print* off a letter about as fast as it can be dictated to him, and its rapid use is learned in a hundreth part of the time required to play the piano passably well. Many **Young Ladies** ought to secure this premium for use, by raising a club of 80 subscribers, which will not be difficult. Some ladies have each secured that many subscribers for us in a very few days.

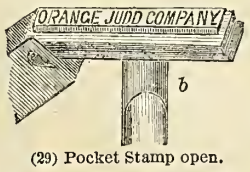
No. 28.—Thermometer.—Fancy Black Walnut Case, length 8 inches, made by CHAS. WILDER.

From same firm as No. 25. *Two* subscriptions at $1.50 each secures this post-paid [or we mail it for $1.25 p.-p.]

No. 29.—Rubber Pocket Stamps.—(Scott's Patent)—*Simple, Effective, Useful, Convenient, and Most Desirable*—always inked and ready for use. Fig. *a* shows a nickel plated case (full size), to be carried in the vest pocket. It can be used as it is, or a pencil can be put in the stem as a handle.—Fig. *b* shows the same with the cover turned back for use. This cover has a pad that inks the rubber type every time it is closed, so that it is always ready. The *rubber* type is on a separate slide, which can be slipped out, and others put in, and may have 1, 2, 3, or 4 lines of type on it.—Fig. *d* is a *print* from a vest Pocket Stamp, like one we have carried for 15 months, using it to mark clearly anything desired, and also save carrying a pocket full of cards. These stamps can be used without new inking from 1 to 3 months, and for re-inking a can of carmine ink goes with each stamp for replenishing the pad occasionally. Every business man will find these Stamps a great convenience, in place of ordinary business cards, for marking parcels, etc. The Rubber type is very durable, and, being elastic, prints well on hard surfaces also.—For *Two* subscriptions at $1.50 each, we will present, post-paid, No. 29 with one line of any name as desired [or send it post-paid for $1.25]. (For each additional *line* of type 25 cents extra, giving address, or business, or both.) [NOTE.—For 46 cents extra, we will send with No. 29 an extra slide, with one line of rubber type (any full name desired), and bottle of *indelible* ink, for marking linen, clothing. These are made by S. B. SCOTT & SON, 194 Broadway, N. Y.

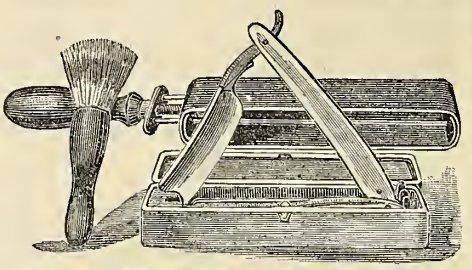


(29) Pocket Stamp closed—(full size.)

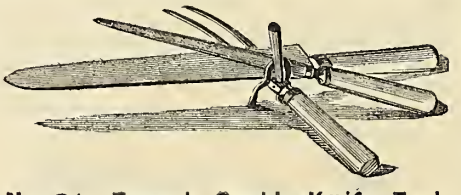


(29) Pocket Stamp open.

(d) Rubber Slide & Type. RICHARD ROE, New York City.

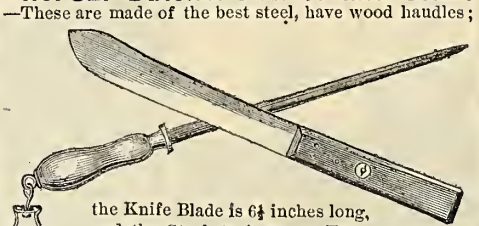


No. 30.—Shaving Set.—This consists of a pair of fine Steel Razors, made by Joseph Rodgers & Sons, Sheffield, England, packed in a leather case, one of Goldschmidt's Razor Strops, and a Shaving Brush. From J. CURLEY & BRO., 134 and 136 Nassau St., N. Y. Price, $5.75 for the set. *Seven* subscriptions at $1.50 each, will secure this [or we will send the set for $5.75]. Sent by mail, post-paid, in either case.



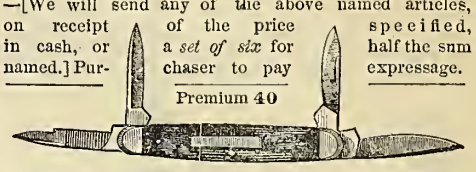
No. 31.—French Cook's Knife, Fork, and Steel.—This is a long (10 in.) thin Knife, with Celluloid or Patent Ivory Handle, warranted not to crack in hot water, made of the best steel, and for use rather than ornament; and it is really pleasing to see how easily it slips through a joint of beef. The fork and steel are made to match, and the fork is supplied with the very convenient patent rest. It would save many wry faces, and perhaps hard words, were it in general use. Supplied by the MERIDEN CUTLERY CO., 49 Chambers St., New York. *Six* subscribers to the *American Agriculturist* at $1.50 each, will secure the whole *free*. [We will supply the set for $4.50.] Receiver to pay expressage.

No. 32.—Butcher's Knife and Steel.—These are made of the best steel, have wood handles;



the Knife Blade is 6¼ inches long, and the Steel 10 inches. From same firm as No. **30**. *Two* subscriptions at $1.50 each will secure these post-paid [or we will supply them and send them for $1.35].

Nos. 33, 34, 35.—American Table Cutlery.—*Useful, very desirable, well tempered,* and *wanted* by *everybody!* We are glad to be able to offer really *good* articles of *American* manufacture, such as are competing *successfully* with the best foreign make. The MERIDEN CUTLERY COMPANY, who supply them to us, recommend these Knives as equal to any Cutlery in the market, and their recommendation is a guarantee wherever they are known. We offer two kinds of Knives, and *three* sizes of *each* kind. No. **33** have Rubber Handles, which are actually boiling-water proof, so that, if they were accidentally to remain in it for several minutes, or even hours, they would not be injured. The Blades are of the *best steel*, and *warranted*. Premium **33** is the Desert or Tea size, sold at $14.75 per *dozen*. We present of these *twelve* knives and *twelve* forks to any one sending only 16 subscribers at $1.50 each... For 17 subscribers, at $1.50 each, we will give either the medium size, or the large Dinner size, sold at $15.70.—Premium **34** have *Ivory* Handles, are selected with great care, have Steel Blades, and are beautiful articles; they are the Tea or Dessert size, which, with forks, sell at $18.50. Only 19 subscribers, at $1.50 each, secures these... For 22 subscribers at $1.50 each, we will send the medium size, or the Dinner size, sold at $21.20....For 23 names, at $1.50 each, we will send the larger Dinner size, sold at $22.50. The Forks, which accompany these Premiums, (Nos. **33** and **34**), are made of genuine Albata, and warranted *double-plated with coin-silver*. These Forks are furnished to us by the MERIDEN CUTLERY CO.....Premium **35**, the Carving-Knife and Fork (given for only 5 subscribers), are made by the MERIDEN CUTLERY CO., with fine Celluloid Handles. Price $3.50. They are beautiful, and serviceable articles for daily use. These premiums are very useful and desirable, and have been secured by many persons in past seasons. —[We will send any of the above named articles, on receipt of the price in cash, or a *set of six* for named.] Purchaser to pay specified, half the sum expressage.



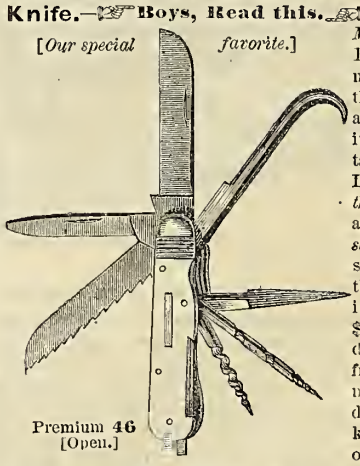
Premium 40

Nos. 36 to 40.—Pocket Knives.—HERE'S FOR THE **Boys** AND **Girls**!—These Premiums are among the most pleasing and useful that we have ever offered. Every boy, and girl too, wants a pocket knife. We give them an opportunity to obtain a most valuable one, for merely a little effort. Any boy or girl can easily collect the few subscribers required to get one of these fine premiums *free*. These knives are furnished by the MERIDEN CUTLERY CO., 49 Chambers St., New York, whose work is *equal to any done in this country or Europe*. No. **36** is a neat, substantial $1.00 Knife, *four* blades and *stag* handle, given post-paid for only 2 subscribers at $1.50 each.—No. **37** is a similar Knife of extra quality, price $1.50, given post-paid for only 3 subscribers at $1.50 each.—No. **38**, a $2.00 Knife, Pearl handle, given post-paid for 3 subscribers at $1.50 each.—No. **39**, a $2.75 Knife, *five* blades, Pearl handle, sent post-paid for only 4 subscribers at $1.50 each.—No. **40**, Ladies' four-blade, Pearl handle, $2.00 Knife, given post-paid for 3 subscribers at $1.50 each. [Any of the above Knives will be supplied post-free for the price named for each.]

Nos. 41 to 45.—Pocket Knives.—All Knives, whether sold or given as premiums, will be sent *post-paid*, or in "Registered Mail" if 10 cents be sent us. No. **41.**—*Pocket Knife, 4 Blades.* Stag or ivory handle. Price, $1.00. *Two* subscriptions, at $1.50 each, will secure this. [Or we will send it for $1.] No. 42.—*Pocket Knife, 4 Blades.* Larger size. Stag or ivory handle. Price, $1.25. *Two* subscriptions, at $1.50 each, will secure this. [Or we will send it for $1.25.] No. 43.—*Pocket Knife, 4 Blades.* Pearl or tortoise-shell handle. *Three* subscriptions, at $1.50 each, will secure this [Or we will send it for $1.50.] No. 44.—*Pocket Knife, 4 Blades.* Larger size. Pearl or tortoise-shell handle. *Three* subscriptions, at $1.50 each, will secure this. [Or we will send it for $1.75.] No. 45.—*Pocket Knife, 4 Blades.* Pearl or tortoise-shell handle. *Three* subscriptions, at $1.50 each, will secure this. [Or we will send it for $2.] All the above Premiums (Pocket Knives), are furnished by J. CURLEY & BRO., 134 and 136 Nassau St., N. Y., and all made by Joseph Rodgers & Sons, Sheffield, England.

No. 46.—Multum in Parvo Pocket Knife.—☞**Boys, Read this.** Yes, and the *Men*, too. The Editor thinks more of this than any other article of twice its cost. He obtained one in London just *thirteen years* ago, which *he still carries*, and says it far more than pays the interest on $100, (2 cents a day,) for, aside from its ordinary use as a double-bladed knife, some one of its "tools" is often worth a "quarter," by being on hand and just the thing wanted in an emergency. He sent an order to England at three different times, but only received much larger, clumsier articles, less effective, and costing $5 each, and finally learned that the original maker was dead. He then got some English cutlers here to make them, but they did not always succeed in keeping up a supply of first-class articles. We now get them *all right* of the MERIDEN CUTLERY COMPANY, and much cheaper than any imported. The Engraving shows the parts of the knife, except

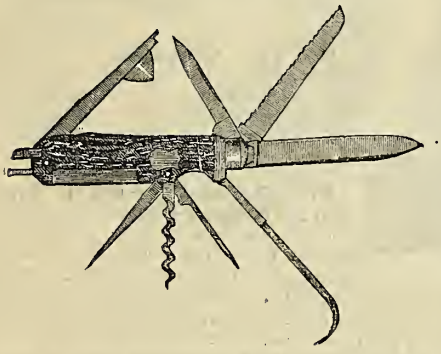
[*Our special favorite.*]



Premium 46 [Open.]

Premium 46 [Closed.]

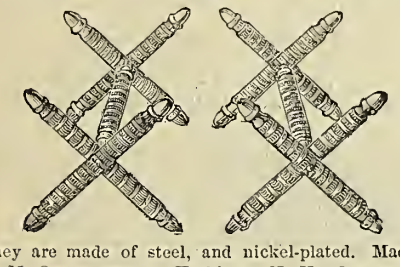
the very convenient and very effective *Screw-driver*, hidden by the opened large blade. The *Saw* is double-toothed, and will cut an inch board, saw off a good-sized stick, cut a notch, etc. The *Hook* is used to lift a stove-cover, pry open sundry things, clean a horse's hoof, pull on the boots, etc. The *Punch* makes holes in harness, wood, etc., which can be enlarged by its sharp corners. The *Gimlet* and *Corkscrew* are convenient, of course. The *Tweezers* and long *Pointer*, or *Brad-awl*, drawn from the end of the handle, often come into use. The back of the Hook makes a good *Hammer* for tacks, and small pounding. The inside of the Hook forms a small *Nut-cracker*. All close into a compact white handle, the whole weighing only 2 ounces. IT IS A POCKETFUL OF TOOLS. This year only *five* subscribers at $1.50 each brings it *free*, post-paid.—[We will send one, post-paid, for $4.00.]



No. 47.—Sportsman's Knife.—Made by Geo. Wostenholm & Son, of England. Stag handle; length, 3¼ inches; contains Screw-driver, two knife and one saw Blade, hook, punch, gimlet, corkscrew, tweezers, pointer, brad-awl, and lance. From same firm as No. 48.—*Four* subscriptions, at $1.50 each, will secure this. [Or we will supply it for $3.25.] Sent post-paid.

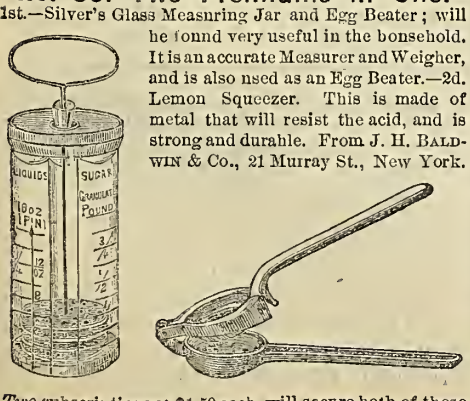
No. 48.—Pruning Knife.—Made by Joseph Rodgers & Sons, Sheffield, England. Stag Handle. From J. CURLEY & BRO., 134 and 136 Nassau St., N.Y. *Two* subscriptions at $1.50 each, secures this post-paid [or we mail it for $1.25 p.]

No. 49.—Pair of Knife Rests.—Very neat and convenient little things for any dining table, being receptacles for the carving-knife when it is not in use.



They are made of steel, and nickel-plated. Made by H. M. QUACKENBUSH, Herkimer, N. Y. One *new* subscription, at $1.50, will get these. [Or supplied for 75c.] ☞ If to go by mail, send us 6 cents for postage & packing

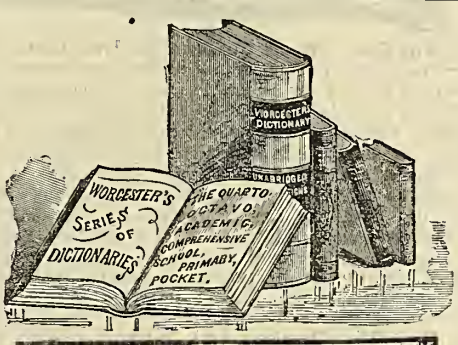
No. 50.—Two Premiums in One.—1st.—Silver's Glass Measuring Jar and Egg Beater; will be found very useful in the household. It is an accurate Measurer and Weigher, and is also used as an Egg Beater.—2d. Lemon Squeezer. This is made of metal that will resist the acid, and is strong and durable. From J. H. BALDWIN & Co., 21 Murray St., New York.



Two subscriptions at $1.50 each, will secure both of these [or we will supply both of them for $1.50.] Receiver to pay expressage.

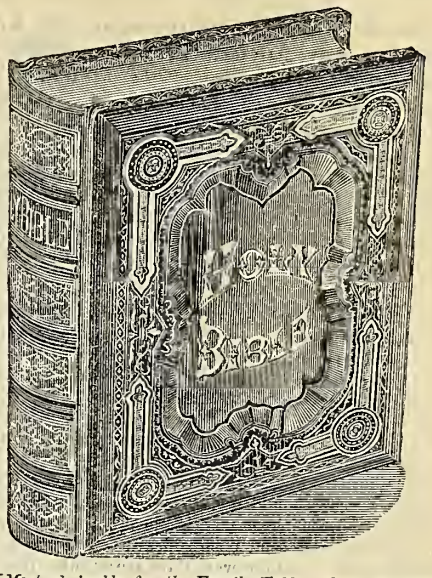
No. 51.—Worcester's Pocket Dictionary.—(Over 18,000 Words.) Here is a *Great Convenience* for every one—a Neat, Handy Dictionary, in firm, flexible-cloth binding; size, 3⅛×4½ inches; **313 pages;** very clear print, for old eyes even—just the book for use, and easily carried in the pocket. It contains over **18,000 words,** Abbreviations, Rules for Spelling, Pronunciation, Spelling and Definition of Words, many valuable Numerical Tables, etc. Also over 100 Engravings. (These are small, but very useful in illustrating words.) The above Pocket Dictionary will be sent post-paid to every one who will forward one *new* subscriber for the *American Agriculturist* at $1.50. To every one who forwards *three new* subscribers at $1.50 each, we will present, post-paid, *four* copies of this Pocket Dictionary,—one for himself, and one for each of the new subscribers.—☞ *Of course, in this, as in all other cases, the names can count on no other premiums.*

No. 52.—Webster's Pocket Dictionary.—Ivison, Blakeman, Taylor & Co.'s Edition. This volume is abridged from the American Dictionary of Noah Webster, LL.D. By William G. Webster and William A. Wheeler. It embraces a careful selection of about 18,000 of the most important words of the language, and is illustrated with nearly 200 engravings on wood. Bound in cloth, illuminated sides. Price $1.00.—This will be sent for *Two* new subscriptions at $1.50 each.



No. 53.—A Grand Premium.—The offer of this Premium is open only to Jan. 1, 1881. [Presented now for only *ten* subscriptions.] A large, handsome Volume of **1854** pages, containing considerably more than **100,000** words in its Vocabulary, with the correct Pronunciation, Definition, and Etymology. Fully illustrated and unabridged. Four full-page illuminated plates. Bound in library sheep, marbled edges. Price, $10.00. Most of the thoroughly educated men of the country consider this as by far the best Dictionary in the English Language. It is now regarded as the STANDARD AUTHORITY, and so recommended by Bryant, Longfellow, Whittier, Sumner, Holmes, Irving, Winthrop, Agassiz, Marsh, Henry, Everett, Mann, Stephens, Quiney, Felton, Hilliard, Memminger, and the majority of our most distinguished scholars. As a source of *general information*, this grand volume stands next to the Universal Cyclopædia. *It should be in every family.* It is offered on far more favorable terms than ever before. Let a multitude of Boys, and Young Men, *each* get **only 10** subscribers, at $1.50 each, for which we will *present* this invaluable work. *A great many have done so in the past*, when many more subscribers were needed to obtain it free. It is worth trying for all winter; but you can get subscribers enough in a week (only *ten*) to obtain it *free*. It is published by Messrs. J. B. LIPPINCOTT & Co., Philadelphia.—[We will supply this Dictionary for $10.00.] It can be taken at the office, or sent by express.—The carriage to be paid by the receiver.

No. 54.—Daisy Printing Press.—The Press is made of Malleable Iron, Japanned in black, and ornamented. The Outfit consists of the Press, one Composition Ink Roller, one can best Card Ink, one Daisy Composing Pallet, one font fancy Card Type, including spaces and quads. The whole packed in a wooden box, with sliding cover, with full directions to Amateurs.—A good thing for boys. *Three* subscriptions at $1.50 each, will secure this [or we will supply it for $2.00.] The receiver to pay expressage.



[*Most desirable for the Family Table; also a Marriage Gift, Holiday or other Gift to a Son, Daughter or Friend*].

Nos. 55 and 56.—Magnificent Family Bible (Pictorial).—(A large number of these sent out last year gave great satisfaction.) Over **1,400** Pages; and Illustrated with **2,500** Engravings, on Steel and Wood, by Gustave Doré, and other celebrated artists; large, very plain type; Illuminated title pages, Lord's Prayer and Commandments. It contains excellent maps of Holy Land, etc.; complete and partial Household Dictionary of Antiquities, Biography, Geography, and Natural History, by Wm. Smith, LL.D.; Maps and Illustrations and Panoramic Views of Holy Land, Jerusalem, Wilderness, Mt. Sinai, etc., etc.; History of all existing Religious Denominations, and Ancient and Modern Sects; History of English Bible; a large Concordance; full Marginal Notes and References on every page; contents of Old and New Testaments arranged for reference to any subject or occurrence; Chronology; Harmony of the Gospels, and *many* other useful features too numerous to recapitulate here; **making it one of the most complete and useful Family Bibles ever issued—a real Biblical Cyclopædia.** It has also a very elegant Marriage Certificate in seven colors, and a unique Family Record, also in colors, etc., etc. No. **55** is bound in Turkey Morocco, *deep panelled*, beveled edges, full gilt on edges, sides and back (see engraving). Price, $12, including receiver's name, gilt in one line. (Other lines added in gilt for 20 cents per line). Weight, about **13 lbs.;** expressage or freight to be paid by purchaser. This magnificent Bible will be **PRESENTED** to any one sending 13 names at $1.50 each, expressage, gilding names, etc., as above.—No. **56.**—The *same* Bible as the above in every way, with raised panels, gilt edges, etc., except that the binding is in *French* Morocco, and the sides are plain, instead of full gilt—which some prefer. Price $10; weight, expressage, gilding names the same as No. 55. This will be **PRESENTED** for only 11 subscribers at $1.50 each. These splendid Bibles will also be supplied at the prices above named.

No. 57.—Bonanza Printing Press.—The Press is made of Malleable Iron, japanned in black, ornamented with red and gold stripes. The outfit consists of Press, one Brass Composing Pallet, one two-inch Composition Roller, one box Wade's Best Card Ink, one set Spacing Regelets, one Pack White Bristol Cards, and a full 2A 3a font of Fancy Card Type, including Spaces and Quads, which will print a name or one line of type.

The whole packed in a wooden box, with sliding cover, with full directions, How to Print and Set Type. From same Company as No. 111. Four subscriptions, at $1.50 each, will secure this.—[Or we will supply it for $3.00.] Expressage to be paid by the receipient in either case.

No. 58.—100 Assorted Stereoscopic Views.—From STIRN & LYON, 20 Park Place, N. Y. *Seven* subscriptions at $1.50 each will secure these [or we supply them for $6.00 and send them post-paid.]

No. 59.—50 Assorted Stereoscopic Views.—*Four* subscriptions at $1.50 each will secure these post-paid [or we will supply them post-paid for $3.]

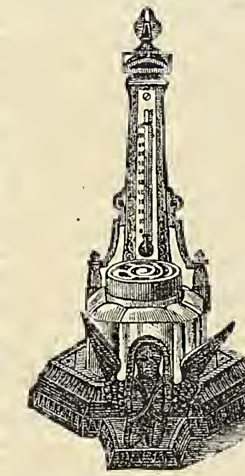
No. 60.—Bound Volumes of the American Agriculturist. — We have Electrotype Plates of the *American Agriculturist* since 1857, and can print and bind any number of *new* volumes. These **23 Large Volumes** contain a vast amount of most *Useful* and *Practical Information*, collected by a great nnmber of *active, earnest, intelligent, practical Men* and *Women*, and illustrated with **many thousands** of *beautiful, pleasing*, and *instructive* **Engravings,** that have *cost over* **Two Hundred Thousand Dollars.** These Volnmes are alone a *large* and *valuable* Library

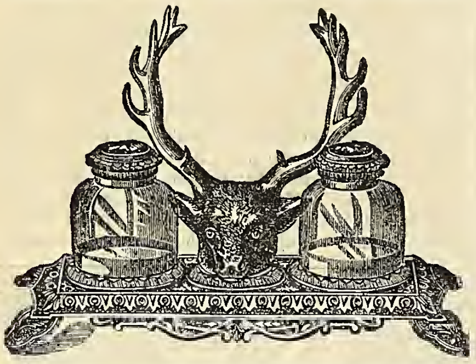
FOR THE

FARM, GARDEN, AND HOUSEHOLD,

and *kindred Subjects*, containing more varied information on all those matters than can be found in books that would cost **five** times the price of these. Each of these **23** Volumes has a full Alphabetical Table of Contents, for readily referring to any article or subject in the Volume. They are neatly Bound in uniform style, with gilt title, etc.; they are very convenient, and will finely adorn the Book-Case or Table. The price of these volumes, neatly bound, is $2.00 each or, sent post-paid for $2.30. To every person who is himself a snbscriber we will present and send post-paid, any One of the above volumes, in return for every three **new** subscribers he will send at the regular subscription price of $1.50 each. The receiver of the Preminm can make his own selections from any of the volumes back to 1857.

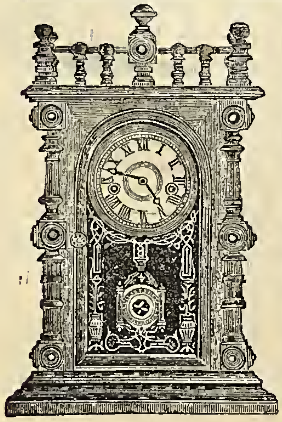
No. 61.—Ink-Stand. -- Single with Thermometer. Diameter, 5½ inches. Hight, 9½ inches. From the same firm as No. 92. Price, $1.00. 2 subscriptions at $1.50 each, will secure this [or we will supply it for $1.00]. This is a very fine arrangement for the low price at which it is supplied. It can not be sent by mail. It can be taken at the office, or sent by express anywhere, as it is well packed in a box. The express expense will be light, and is to be paid by recipient.

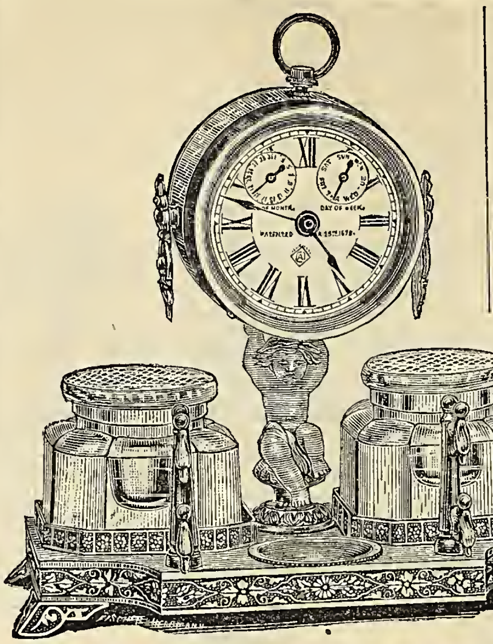




No. 62.—Ink-Stand.—Double, with pen-rack; length, 10½ inches; hight, 5½ inches. From the same firm as No. 92. Price, $1.00. *Two* subscriptions at $1.50 each will secure this [or we will supply it for $1.00]. Express charges to be paid by recipient in either case.

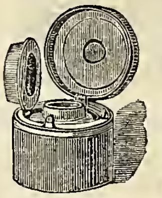
No. 63.—Clock "Gerster." — Rosewood Case, with fancy glass front. Highth 18½ inches, eight-day and strike. An elegant and most desirable time-piece. From E. N. Welch Manu'f'g Co., 6 Warren St., N. Y. *Fifteen* subscriptions at $1.50 each will secure this [or we will supply it for $13.] Receiver to pay expressage or freight. It will be carefully boxed, without extra charge, and go safely to any distance by express or freight.

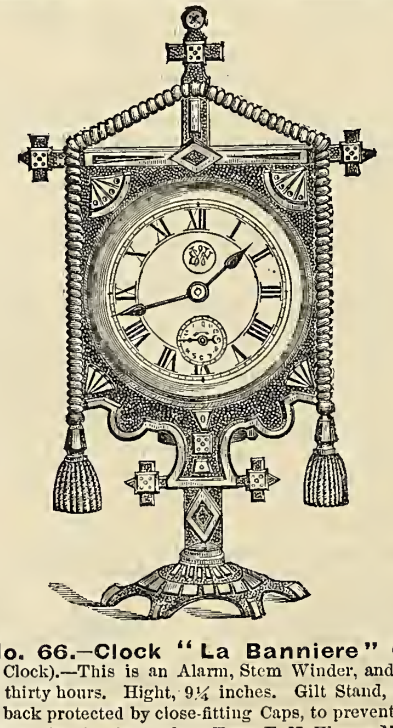




No. 64.—Office Clock and Inkstands. —This heautiful combination of the useful and ornamental will prove a very acceptable present in many cases. It is 7½ inches in hight, and 8 inches in width. It comprises a handsome silver-plated clock, snpported by a gold-plated figure, with two ornamental inkstands, pen-rack, etc. On the dial are indicators of the day of the week and of the month; is a stem-winder, hands set at the back, and a good time-keeper. From the Ansonia Clock Co., 19 and 21 Cliff St., New York. *Nine* subscriptions at $1.50 each are required to get this elegant Premium. [We will send one on receipt of $7.50.] Express to be paid by recipient.

No. 65.—Pocket Ink Stand. — Made of Brass, covered with Russia Leather and having a spring cover. From Willy Wallach, 36 Park Row, N. Y. *Two* snbscriptions at $1.50 each will secure this post-paid [or we will mail it for $1.50 p.-p.]—A very handy article to carry in traveling, or to keep in the desk, closed when not in use, so that it will not spill the ink if upset accidentally.





No. 66.—Clock "La Banniere" (Banner Clock).—This is an Alarm, Stem Winder, and will run thirty hours. Hight, 9¼ inches. Gilt Stand, front and back protected by close-fitting Caps, to prevent dust from getting in the works. From E. N. Welch Manufacturing Co., 6 Warren St., N. Y. Price, $5.50. *Seven* subscriptions at $1.50 each will secure this. [Or we will supply it for $5.50]. Expressage to be paid by recipient.

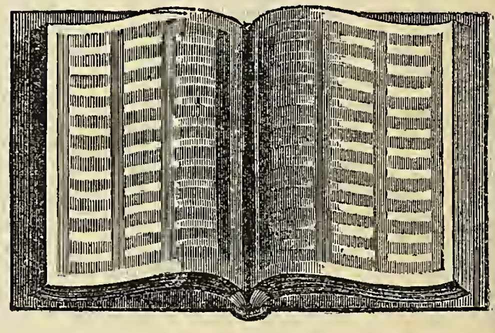
No. 67.—Girl's Writing-Desk.—This has a wood frame, covered with Leatherette, and lined inside with paper to imitate Wood; outside is handsomely decorated on top in silver and gilt. Length, open, 14 inches; width, 10 inches; it has Lock and Key and two Ink-Bottles. From Koch, Sons & Co, 156 William St., New York, Three subscriptions at $1.50 each, will secure this [or we supply it for $2.00]. Expressage to be paid by the recipient.

No. 68.—Jewel Box.—This is the same as No. 70, with Tray extra and Lock and Key. From same firm as No. 58. *Two* subscriptions at $1.50 each, will secure this post-paid [or we will mail it p.-p. for $1.50.]

No. 69.—Handkerchief Box.—This is the same as No. 70, but consists of two boxes, one fitting inside the other. From same firm as No. 58. *Three* subscriptions at $1.50 each, will secure this post-paid [or we send it post-paid for $2.00].

No. 70.—Glove Box.—This is Japanese, lacquered in black, handsomely inlaid with colored pearl. From same firm as No. 58. 2 subscriptions at $1.50 each, will secure this [or we will supply it for $1.25 post-paid].

Nos. 71 to 74.—Mark Twain Scrap Books. — Almost everybody can find good nse for a Scrap Book, and the collections made in one often become of great interest and valne to the owner. We have made arrangements with Messrs. Daniel Slote & Co., 119 William St., New York, to supply the well known and highly approved Mark Twain Scrap Books. It is often found that, paste or mucilage not being at hand when wanted, the plain page Scrap Book is of no service whatever. With a Mark Twain Scrap Book no such difficulty occurs. In all the books, the gummed col-



umns are arranged for either short or long clippings. A clipping the length of a column may be secured by slightly moistening the upright lines, and for short extracts the cross lines may be used. The gummed lines generally serve as guides for placing the scraps.

No. 71.—Mark Twain Scrap Book, 80 pages; size, 8½×11 inches; full cloth binding. This will be presented by us, post-paid, for 2 subscribers, at $1.50 each. [Or we will supply one, and send it post-paid, for $1.45.]

No. 72.—With 76 pages; size, 9×11¾ inches; full cloth. We present it for 3 subscriptions, at $1.50 each. [Or we will supply one, and send it post-paid, for $1.90.]

No. 73.—With 100 pages; 9×11¾ inches; cloth and gold binding; fancy stamp. Will be presented by us for 4 subscriptions, at $1.50 each. [Or we will supply one for $2.50.] *Expressage in either case to be paid by receiver.*

No. 74.—With 150 pages; 9×11¾ inches; cloth and gold binding; fancy stamp. Will be presented by us for 5 subscriptions, at $1.50 each. [Or we will supply one for $3.25.] *Expressage in either case to be paid by receiver.*

These and the Art Scrap Books which follow, are beautiful and useful for Holiday Preseuts.

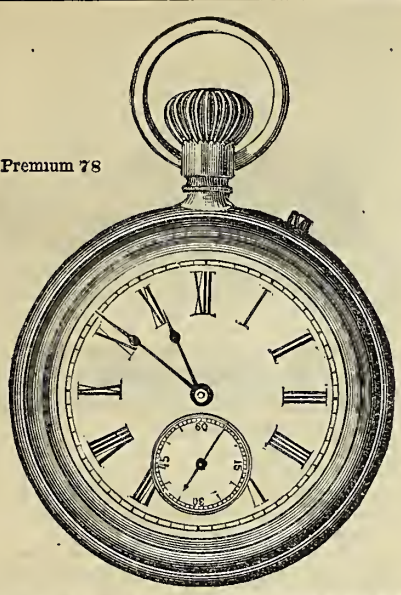
Nos. 75 to 77.—Art Scrap Books.—Patent Back, Adhesive Page. Admirably adapted for the preservation of Scrap Pictures, Unmounted Photographs, Chromos, and Pictures of any description. The whole page is gummed with a patent preparation, imperceptible to the eye, but by means of which any article may be pasted in, leaving the uncovered portion of the page in its natural tint. They are supplied to us by Messrs. Daniel Slote & Co., 119 William St., New York City.

No. 75. — 76 pages, 6×8½ inches. Sent post-paid by us for 2 subscriptions at $1.50 each [or for $1.25].

No. 76, with 76 pages, 8¼×11 inches. Sent by us post-paid for 3 subscriptions at $1.50 each [or for $2.30].

No. 77, with 100 pages, 10¼×13 inches. Supplied for 4 subscriptions at $1.50 each [or for $3.00]; *but for this style expressage must be paid by Receiver.* All of these, and especially the last two, are elegant presents.

Subscriptions for **English** or **German** Editions are at the same rates, and count alike for Premiums, together or separately.



Premium 78

Nos. 78 to 81.—GOOD WATCHES.—A very good report comes generally from hundreds of our readers who obtained the watches we were able to offer last year. As there has been no change in the price of gold and silver, or in prices abroad, we are happy to announce that we can continue to offer the same Watches, and on the same terms as last year, so that hundreds of others can get them this year. A large supply has been ordered made in advance, and we hope to meet all calls more promptly than was the case last year.

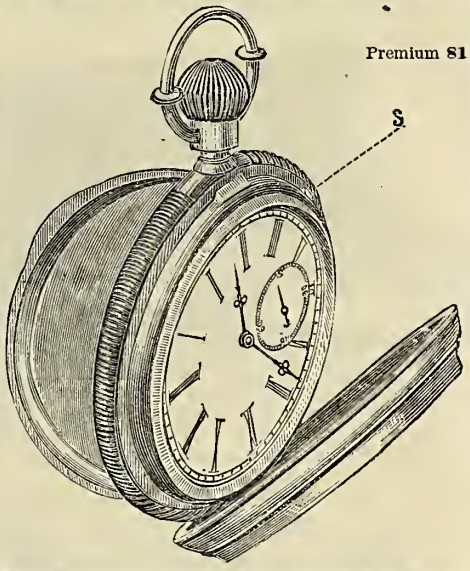
No. 78.—A GOOD WATCH.—This is a **Stem Winder and Stem Setter,** needing no key or opening to admit dust. Dial clear, with Second Hand (see engraving above). Crystal strong, thick, flat, with the *new beveled edges*; Case strong, good looking, heavily nickel-plated, a *good resemblance to silver*. Weight, 4¾ onnces. It is the best *time-keeper* for a $10 Watch we have ever found. This has been supplied two years with general satisfaction. We continue to offer this as a premium for 13 subscribers at $1.50 each, [or supply it for the price, $10]. There are as *good looking* watches sold for $7 to $9—but we have never found another *equally good time-keeper* so low as $10.

No. 79.—EXTRA SILVER WATCH.—This is of the same *pattern* as the above, and made by the same Company in Switzerland, but the case is *Coin Silver*, and the works are of extra HIGH GRADE, with **13** *Jewels*, Compensated Balance, etc.—as good a Watch as any $30 or $40 watch we have ever seen. It is good enough for anybody. Face about 1¾ inch in diameter. We offer this Watch with the utmost confidence, that it is one of the *best* and *cheapest* Watches ever supplied for the low price of **$15,** which is so near the *actual cost of making* that we can at best offer it for 20 subscribers at $1.50 each, and do not care to furnish it at this rate, except where such a Watch is specially desired by our friends. [We will supply them to purchasers for the low price of $15.]

No. 80.—EXTRA SILVER WATCH, for BOYS or for MEN who want a smaller Watch. This is every way like No. **79,** EXCEPT that it is of *smaller size*, the face being about 1¼ inch in diameter. The cost is the same except that the smaller case requires a little less silver. This we *present* for 19 subscribers at $1.50 each. [Or, we will supply it to purchasers for $14.50].

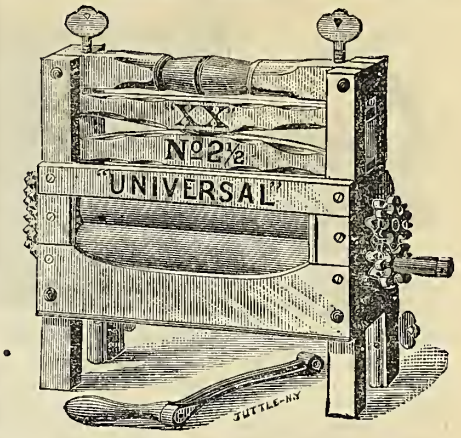
No. 81.—EXTRA SILVER WATCH, HUNTING CASE.—(Heavy Coin Silver Case). This is *precisely the same watch every way* as No. **79** above, EXCEPT that it is in "Hunting Case" as shown in engraving. It will be presented for 22 subscribers at $1.50 each. [We will supply it for the price, $16].

TAKE NOTICE, about ALL the above Watches, (Nos. **78** to **81**). That we can not agree to supply all that may be called for, though we expect to do so. They are manufactured with special care, in one of the best establishments in Switzerland, and can not be obtained or made rapidly. We have a

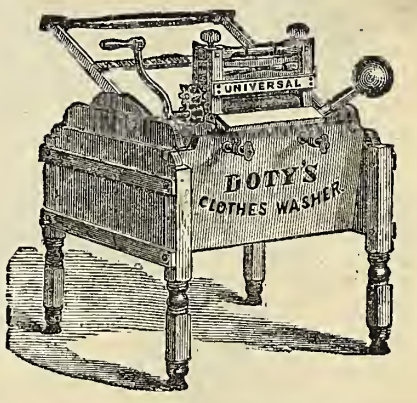


Premium 81

large lot ordered, which will come along from time to time hereafter, and they will be delivered as fast as they arrive, in the order in which applications for them come in paid for, either by premium clubs, or in cash. Those desiring to secure any one of these watches at once as a premium, can send in the *price* and receive it, and when he afterwards raises the full premium club, the price can be deducted from his final remittance. The recipient will pay the expense of expressage. Or we will send either by mail for twenty-five cents extra.



No. 85.—Universal Clothes Wringer.—(*See Engraving above.*)—A very *useful, time-saving, strength-saving, clothes-saving* implement, that should be in *every* family. Here is a thing that is of *great* value, "and no mistake about it." It will pay for itself several times a year, in any family. The wringing out of clothes by hand is hard upon the hands, arms, and chest, and the twisting stretches and *breaks* the fibres with *lever* power. With this Wringing Machine, the garments are passed rapidly between elastic rollers, which press the water out better than hand wringing, and as fast as one can pick up the articles. A most important feature of this Universal Clothes Wringer is the peculiar *cog-wheel* arrangement, which makes both rollers turn together, and always keep their place. Without these, the crank-roller will slip, and pull the fibres, and injure the fabric. A multitude of letters of thanks for these Machines, given by us as Premiums, have been received. It is easy to gather at the regular rate of $1.50 each, only 10 subscribers, and this will secure a *present* of one of these very valuable $7.50 Universal Wringers. They are made by the Metropolitan Manufacturing Co., and furnished by R. C. Browning, 32 Cortlandt St., N. Y. [We will supply one of these valuable machines on receipt of the price, $7.50]. Receiver to pay expressage.

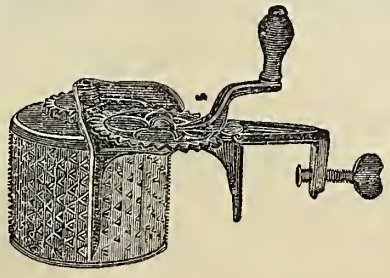


No. 86.—Doty's Improved Clothes Washer.—Made with the Metropolitan Balance Weight. Over seventy-five thousand families are using this Washing Machine in the U. S. Made by the Metropolitan Manufacturing Co., 32 Cortlandt St., N. Y. *Seventeen* subscriptions at $1.50 each secures this (or we supply it for $14.) Receiver to pay expressage.

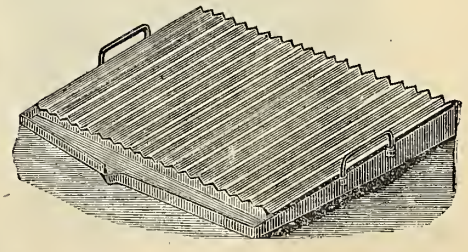
No. 82.—Hot-Blast Oil Stove.—The engraving represents one of Whitney & Hall's Patent Hot-Blast Oil Stoves, made by the Whitney Manufacturing Co., of 1123 Chestnut street, Philadelphia. The cut represents the stove proper, with extension top and oven. With one of these articles, we are assured that the entire cooking can be done for a small family at mere nominal expense, by the use of kerosene oil. Besides the ordinary cooking, it can be used for heating sad-irons, baking, etc., doing the work as well, with very much less heat, than an ordinary cook stove. For 15 subscriptions at $1.50 each, we will furnish a stove, an extension top, large oven, large broiler, and sad-iron heater [or will forward one for $13.75], the receiver to pay the expressage.

No. 83.—Houchin's Improved Patent Pocket Cook Stove.—With Gridiron and Boiler (with folding handles) holding nearly one quart, which can be used as a drinking cup, which will boil water in five minutes to make two or three cups of Tea, Coffee, or Chocolate; to Boil Eggs, Stew Oysters, etc. Pour about two tablepoonsfuls of alcohol through the wire gauze, and light with a match or taper. The Lamp being filled with an indestructible packing will not spill or explode. Send *two* subscribers, at $1.50 each, and get it *free*, post-paid. These stoves are made by McCoy & Sanders, 132 Duane Street, New York. —[We will supply and send one, post-paid, for $1.25.]

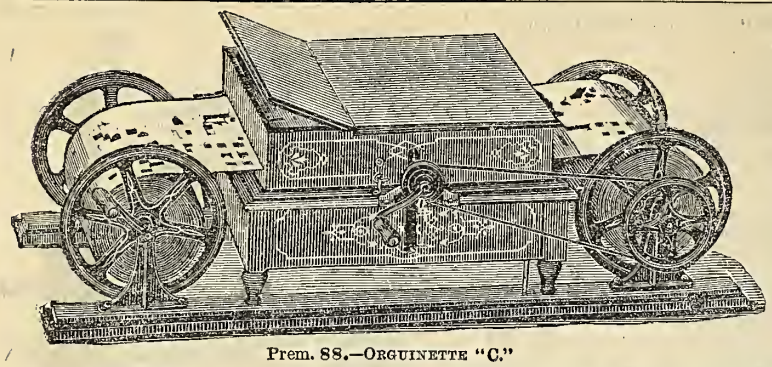
No. 84.—Houchin's Revolving Grater.—Just the thing for horseradish, pumpkins, squash,



cocoanut, and other vegetables. From McCoy & Sanders, 132 Duane St., N. Y. *Two* subscriptions at $1.50 each will secure this post-paid (or we mail it for $1 p.-p.)

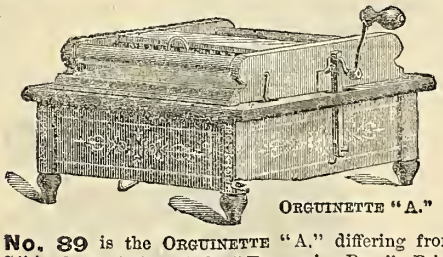


No. 87.—Cornwall's Patent Broiler.—Made of Iron, and is provided with a Gravy Pan, which receives the juices of the meat, and prevents any dripping into the fire. Fits over any stove, and broiling is done with a moderate heat. From same firm as No. 50. *Two* subscriptions at $1.50 each, will secure this (or we will supply it for $1.50.) Receiver to pay expressage.



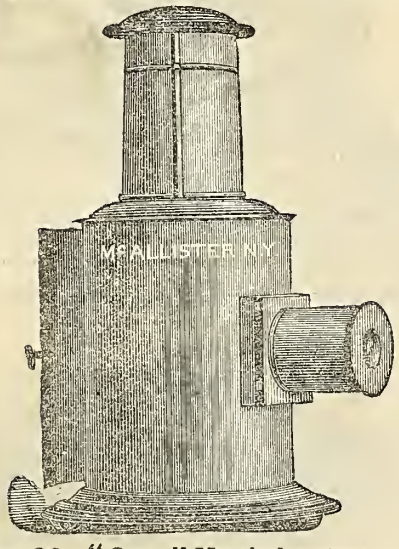
Prem. 88.—ORGUINETTE "C."

No. 88.—"The Orguinette."—A Capital Musical Instrument for the million—for those who have had no time or opportunity to learn to play, yet who desire music in the house—at far less expense, and in far greater variety than is supplied by the Music Box or Hand-Organ. The *Orguinette* has the usual Parlor-Organ or Melodeon reeds, with a small, but effective wind-bellows, and in sweetness of tone, brilliancy, promptness of action, etc., is quite remarkable for a musical instrument of so moderate a cost. The notes are most ingeniously and yet simply produced by the passage through the instruments of strips of perforated paper, the apertures so arranged as to open the keys and produce just the notes, and length of sound on each, required by the pieces played. These may be church music, lively sounding airs, national, and operatic selections, quadrilles, etc. The prepared perforated paper is sold at low rates (6½ cents per foot), and from the catalogue one may select any amonnt and variety of tunes desired, and at small cost. Any one desiring further description of the instrument, can send for circulars to the MECHANICAL ORGUINETTE Co., No. 831 Broadway, New York. We offer two varieties. Premium No. 88, the ORGUINETTE "C" (illustrated in the engraving), has the "Expression Box," giving a variety of pleasing effects, by simply raising and lowering the lid. 14 feet of the perforated music paper go with this. This will be presented for 15 subscribers at $1.50 each. [It will be supplied complete by us, for $14.00], expressage to be paid by the receiver....



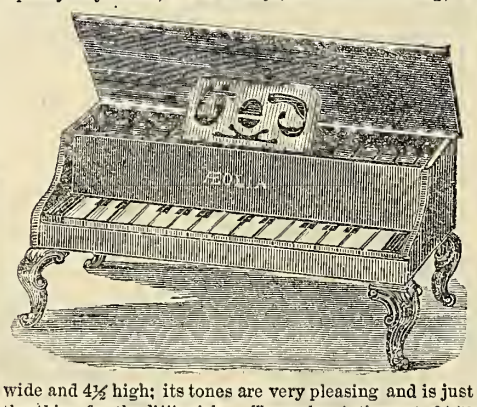
ORGUINETTE "A."

No. 89 is the ORGUINETTE "A," differing from "C" in the omission of the "Expression Box." Price with 14 feet of music paper, $8.00, for which price we will supply it; or we will present it for 10 subscribers at $1.50 each. Expressage paid by recipient in either case.

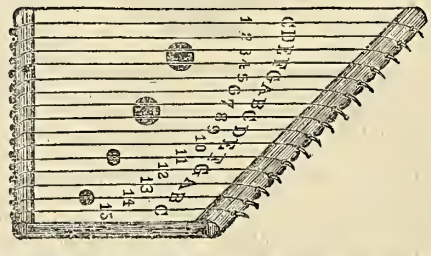


No. 90.—"Gem" Magic Lantern.—The Gem is a new style of Magic Lantern, designed especially for the amusement and instruction of the young; and intended to supersede the imported "Toy" Magic Lanterns, over which it possesses the following advantages: The *Body* of the Gem Magic Lantern is convenient in form—is substantially made of strong tin, neatly japanned, and will last for years. The *Lenses* are of excellent quality, accurately ground and polished, and define the views clearly upon the screen. The *Light* is obtained by the use of an improved candle in a patented carrier, which keeps the flame constantly in the central line of the lenses, and yields a good illumination. As there is no oil or fluid of any kind, cleanliness is the result, and a child can safely operate the Gem Magic Lantern without difficulty. The *Magnifying Power* is abundant, and the Views can be distinctly enlarged to three feet in diameter, or larger. The *Slides* are neatly finished, and highly colored. Made by THOS. H. MCALLISTER, Manufacturing Optician, 49 Nassau St., New York. We also include with Lantern twelve Gem Magic Lantern Slides, with pleasing views. 9 subscriptions, at $1.50 each, will secure this premium. [Or we will supply one, with the 12 slides, on receipt of $7.50.] Expressage in either case to be paid by receiver.

No. 91.—The "Æolia" Piano.—This is a pretty Toy Piano, it has 15 Keys, is 16 inches long, 10

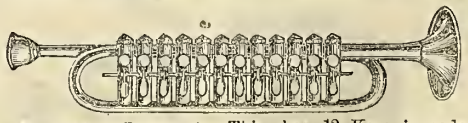


wide and 4½ high; its tones are very pleasing and is just the thing for the *littte* girls. *Two* subscriptions at $1.50 each, will secure this [or we will supply it for $1.00]. Receiver to pay expressage.



No. 92.—Fifteen String Zithern.—A musical instrument which may be new to many of our readers. It can be played by notes or figures, and tuned like a harp. A sheet containing tunes and instructions how to play, accompanies each instrument; it is packed in a box. From E. G. SELCHOW & Co., 41 John St., N. Y. Price, $1.25. Two subscriptions at $1.50 each, will secure this, post-paid [or we will send it, post-paid, for $1.25.]

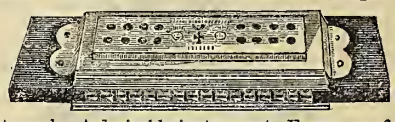
No. 93.—Metalaphone.—This is a Musical Instrument of pleasant sweet tone, in ornamented frame, with 22 Notes (3 Octaves), made of Metal, nickel-plated and engraved, and is played by striking the notes with two small mallets, seen in the engraving. From STIERN & LYON, 20 Park Place, N. Y. *Two* subscriptions at $1.50 each, will secure this [or we will supply it for $1.50]. Expressage to be paid by recipient in either case.



No. 94.—Cornet.—This has 12 Keys, is made of Brass, with Porcelain Mouthpiece. Length, 13½ inches. From same firm as No. 93. *Two* subscriptions at $1.50 each, will secure this. [Or we will supply it for $1.25, post-paid.]

No. 95.—Drum.—Made of bent-Ash, Sheepskin heads, size across heads 14 inches, varnished and ornamented, and sticks. It is a very good drum. From same firm as No. 93. Two subscriptions, at $1.50 each, will secure this [or we will supply it for $1.25], the expressage to be paid by the recipient in either case.

No. 96.—German Harmonica.—Made of black wood, polished, nickel plated. Forty-eight notes

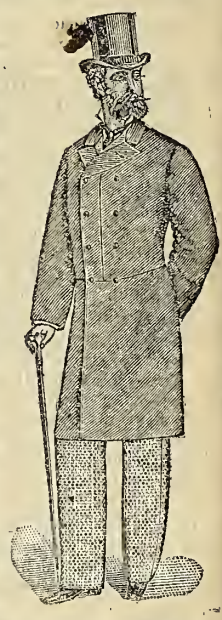


and tremolo. A desirable instrument. From same firm as No. 93. *Two* subscriptions at $1.50 each will secure this post-paid [or we will supply it for $1.25 post-paid.]

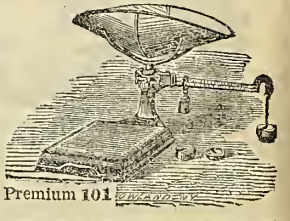
No. 97.—Music Roll.—This is made of imitation "Russia" Leather, and ornamented in gilt. Leather handle, gilt lettered. Length 14½ inches. From same party as No. 67. Two subscriptions at $1.50 each, will secure this [or we will supply it for $1.50,] sent by mail, post-paid, in either case.

No. 98.—Excellent $15 Overcoat.
No. 99.—Excellent $20 Business Suit.
No. 100.—Excellent $30 Dress Suit.

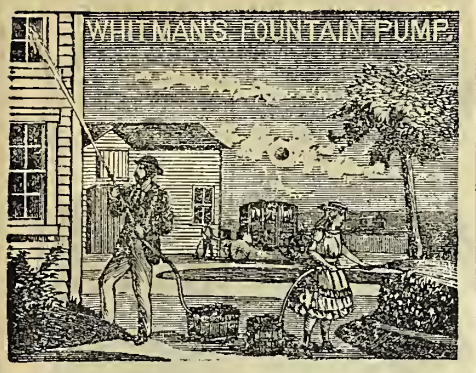
MADE TO ORDER AND WELL MADE.—Here are articles wanted by tens of Thousands. The extensive establishment of JESSUP & Co., 254, 256 Broadway, has long been very widely and favorably known. (Many of the suits now in use by the leading men in the *Agriculturist* Office, came from this establishment, because they have there obtained *good* articles at reasonable figures). This establishment sends samples of fabrics, with prices, all over the country, and full directions, with engravings, enabling any one to furnish all the measurements needed to make up garments, guaranteed to fit. We have made arrangements with Messrs. Jessup & Co., by which we can furnish these good premiums, viz.: No. **98.**—A Good $15.00 Winter Overcoat, will be presented to any one sending only sixteen subscribers at $1.50 each. No. **99.**—A good $20.00 Business Suit, for only twenty subscribers at $1.50 each. No. **100.**—A Good $30.00 Dress Suit (Broadcloth or Diagonal), good enough for a wedding or any occasion, for only thirty subscriptions at $1.50 each. The Garments will be forwarded anywhere by express or otherwise, as desired. Expressage to be paid by receiver. N. B. To those desiring, or entitled to the above garments as premiums, we will mail samples of fabrics *to select from*, with directions for self-measurement, etc., and the garments will be cut and *wett made up* in the style desired. Here is an opportunity for many to get good clothes with no expense, except the carriage. A few persons may unite and make up a club of subscribers, and secure a fine suit as a present to a Clergyman, or to any worthy person.



No. 101.—Family Scales.—These scales, combining the advantages of counter and platform scales, are peculiarly adapted to household purposes. (*See Engraving.*) They weigh from ¼ ounce up to 240 lbs. They have a scoop, or pan, for weighing flour, sugar, or other house stores, and a *platform* for heavier articles, and are just such an apparatus as is needed for in-door or out-door use, occupying less than 2 feet square. These scales are manufactured by the well-known FAIRBANKS & Co., No. 311 Broadway, New York, whose weighing apparatus has long ranked as the *standard* in all parts of the country. Send to them for circulars, if desired. Only 15 subscribers, at $1.50 each, will secure these fine Scales.—[We will also supply these scales on receipt of the price, $14.00.] Receiver to pay the freight.

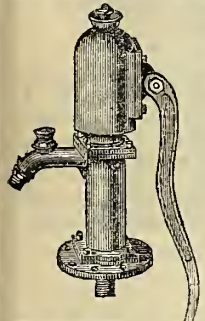


Premium 101



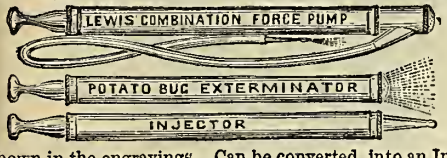
No. 102.—Whitman's Fountain Pump.—The Fountain Pump is made of brass, handsomely finished, with Sprinkler and Rubber Hose attached. It is durable, and just as represented, and does not rust or dry up. It is novel, the mechanism simple, is useful at all seasons of the year, and particularly valuable as an always ready practical Fire Extinguisher. (*See engraving.*) New improvements have been made, and the price with Sprinkler and Hose complete reduced from $10.00 to $8.50. Many thousand dollars worth of property have been saved from fire with/ the help of the Fonntain Pump, and Trees, Vines, etc., innumerable, from Insects and Dronth. It is easily carried, (weighing less than four pounds), and can be used by even a child. Manufactured by JOSIAH A. WHITMAN, No. 128 North Main St., Providence, R. I. Only 11 subscriptions at $1.50 each are needed to obtain this Pump. [Or we will supply one for $8.50.] The Carriage to be paid by receiver.

No. 103.—W. S. Blunt's "Universal Force Pump."—[Patented July 28, 1876.]—(*See Engraving.*)—What most country families need. An *indoor Force Pump* for 1¼ inch Suction Pipe; capacity 15 to 18 gallons per minute. These pumps are tested to 150 pounds pressure, and will throw water from a hose pipe 50 feet high, and 90 feet horizontally, and have revolving tops, so that they can be made right or left hand. Being operated by a side shaft entering through the air-chamber, there is no *piston rod* to wear out the brass stuffing box as in other pumps. They are among the *most powerful, simple,* and *durable pumps to be had.* The ease with which any part can be *renewed* in case of accident, or *access* had to the interior for repairs, commends them for green-houses, farmers, and stockmen, as well as for *city* use. Send for a descriptive circular to THE NASON MANUFACTURING Co., 71 Beekman St., and 71 Fulton St., New York. We will present you this Pump, for your own use, (or for sale at $12,) if you simply procure us 14 subscribers, at $1.50 each, *which you can readily collect* during a very few evenings or on rainy days. It will well repay the effort.--[We will supply this pump on receipt of the price, $12.00.] Receiver to pay expressage.



Preminm 103 UNIVERSAL FORCE PUMP.

No. 104.—Lewis' Combination Force Pump.—This combination makes three machines, as

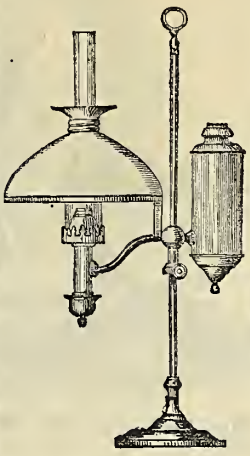


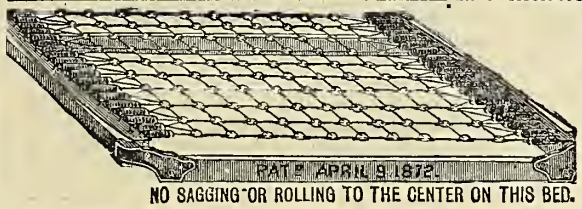
shown in the engravings. Can be converted into an Injector, or an Insect or Bug Exterminator at short notice. It is made of Brass, with three feet of Hose, and will throw a good sized stream of water. From P. C. LEWIS, Catskill, N. Y. *Seven* subscriptions at $1.50 each, secures this [or we will supply it for $5.] Receiver to pay expres'ge.

No. 105.—Umbrella Stand.—Made of Malleable Iron and Bronzed; height 30 inches. From the MERIDEN MALLEABLE IRON Co., 43 Park Place, N. Y. *Four* subscriptions at $1.50 each will secure this [or we will supply it for $2.50.] Receiver to pay expressage.

No. 106.—U. S. Flag.—Made of Delaine or Bunting, extra canvass heading. Length 8 feet. From DETWILLER & STREET, 13 Dey St., N. Y. *Thirteen* subscriptions at $1.50 each, will secure this (or we supply it for $11.00.) Receiver to pay expressage in either case.

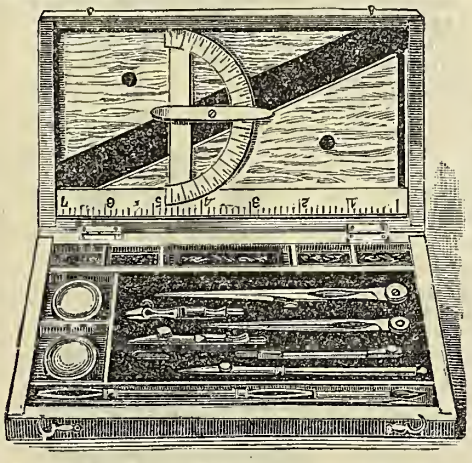
No. 107.—German Student Lamp.—This lamp is known the world over for its beauty and *steadiness* of light, its superiority in economy, safety, etc. C. F. A. HINRICHS, of 31 Park Place, New York, bas made many valuable improvements in their construction. He is the Patentee of the "*Saint Germain, or German Study or Office Lamp,*" made by C. A. Keelmann. This lamp includes the various latest improvements, such as the Enlarged Fount, shut off at the bottom (a great security against accidents in filling), Improved Chimney-Holder, etc. (None genuine without the name of C. F. A. Hinrichs on the Chimney-Holder). We use these lamps in all rooms in the house (kitchen included), and would exchange them for no other method of lighting yet known to us. The price of the St. Germain German Study Lamp is now reduced to $5 for the large size (No. 1), in polished brass, including shade, chimney, and wick, complete, ready for use. We will present one of them to any one sending *Seven* subscribers at $1.50 each. The same Lamp in nickel-plating is sold at $6.00. We will present the Nickel-Plated Lamp for *Eight* subscribers at $1.50 each. Freight or expressage paid by recipient. (25 cents extra, if to be boxed for sending to a distance.)





NO SAGGING OR ROLLING TO THE CENTER ON THIS BED.

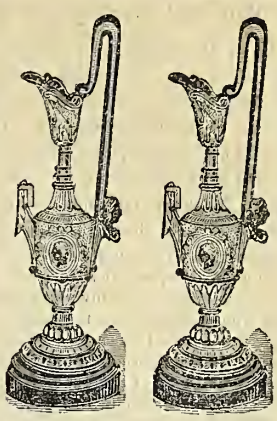
No. 108.—The National Wire Mattress.—Everybody wants a *good* Bed. One who sleeps well, will do more and better work of body and mind, and enjoy better health, and live longer. This premium will help to sleeping comfortably. It is manufactured by the NATIONAL WIRE MATTRESS Co., New Britain, Conn. As shown by the engraving, the Mattress is made on what the manufacturers claim a mechanical principle; that it never can sag; that it will never rust in any climate; that it can be taken apart and folded into small space, and that it is the only one getting its elasticity from wire-tempered Springs. Those who have used these Mattresses, (including our Editors,) pronounce them in every way desirable. To any one sending us 12 subscriptions, at $1.50 each, we will present one [or supply one for $10.50.] Receiver to pay freight. (Send inside bedstead measure.)

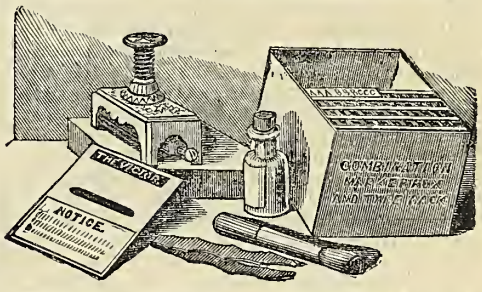


No. 109.—Box of Mathematical Instruments.—Just the thing for a youth who has a taste for drawing. These Instruments are put up in a neat Mahogany Case, which contains: Two Dividers, one Pen Point, one Pencil Holder, one Extension Bar, one Ruling Pen, one Crayon Holder, one Brass Protractor, one Small Scale, two Wooden Triangles, one Cake India Ink, four Cakes Water Colors, Cups and Brush. From same firm as No. 65. We will present this Box of Instruments for 4 subscriptions at $1.50 each. [We will supply one of these for $3.00.]

☞ If to go by mail, send us 15 cents for postage & packing.

No. 110.—Pair of Vases.—These are made of Spelter, with iron base, colored black and green, imitation Bronze. From same firm as No. 105. *Three* subscriptions at $1.50 each will secure these [or we will supply them for $2.00.] Receiver to pay expressage.—These are very pretty Vases for the price, and are quite ornamental. Hight 11 inches — Diameter of Vase 3½ inches.





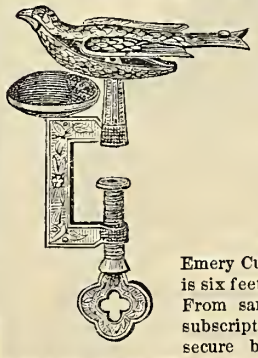
No. 111.—Victor Combination Linen Marker.—Each box contains a Marker, Type Rack, and complete font of Type, with Tweezers for picking up the type, Ink Pad, and a bottle of superior Indelible Ink. The marking for an entire family may be done with the same instrument, the type being movable. From THE ACME MANUFACTURING Co., 31 Park Row, N. Y. Price, $1.00. Two subscriptions, at $1.50 each, will secure this, delivery paid by us. [Or we will deliver it for $1.00.]

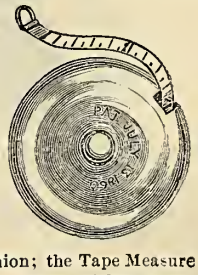
No. 112.—Gentleman's Pocket-book.—Of handsome English calf, extra quality, with 7 Pockets and Strap; also a Bill-fold. From same firm as No. 65. Presented for 4 subscribers at $1.50 each, and 10 cents for postage [or we will supply it, post-paid, for $2.50.].

No. 113.—Lady's Pocket Book.—This is made of American "Russia" Leather, nickel plated mountings and clasps, pockets for silver and bills, with memorandum tablet, silk handle and tassels. From WILLY WALLACH, 36 Park Row, N. Y. *Two* subscriptions at $1.50 each will secure this post-paid [or we will supply it for $1.00 post-paid.]—A very convenient article.

No. 114.—Bird Cage of Bright Brass Wire.—Hight, 18 inches; diameter, 9 inches; base, 12½ inches, with patent Cups and metal-tipped Perches. From the WILLIAMS GLOBE WIRE WORKS, 85 Fulton St., New York. We will present this for 5 subscribers at $1.50 each, [or we will supply it for $4.] Expressage to be paid by the recipient.

No. 115.—Sewing Bird and Spring Tape Measure.—The Sewing Bird is plated, with





Emery Cushion; the Tape Measure is six feet in length, nickel plated. From same firm as No. 48. *Two* subscriptions at $1.50 each will secure both of these premiums post-paid [or we will supply them post-paid for $1.30].

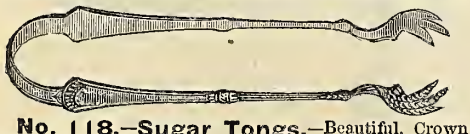
Bad and Good Silver-Plated Ware.

In no other business we can think of, is there so great an opportunity for *fraud* as in silver-plated ware. The electric battery will spread 25cents of silver over a whole tea set, or over a hundred spoons, made of cheap pewter, so that nothing but pure silver can be *seen;* and a great deal of plated ware little better than this is made and sold. The deception is not discovered until it is put to wear. But the electric process continued long enough will coat an article with silver so thickly that it will, if on a good base, be equal to solid silver for service and good looks during many years, while costing far less; and when by long use the silver wears off in spots, or over the whole, it is easy to renew the coat at small expense. The inexperienced purchaser must depend wholly upon the *honesty* of the manufacturer.—Another point is to put the plating upon *white* metal (not lead or common pewter) so that it will not show even if loug, hard usage wears off a point or corner. In selecting the following Premiums Articles we have taken special care to get *only the very best in all respects*, those which we can recommend and warrant.—Our readers who get any of these, as Premiums (or by purchase), may rely upon having *first-rate* articles, and as *cheap* as they can be *honestly* made. They can find plenty of similar articles, at less than a fourth the prices named, and that will look as well for a few weeks, or months, if not used, but they will be *very dear*. We do not compete with the silver-plated articles frequently offered at *apparently* low rates. The Premiums 116 to 141 (excepting 138-9 & 140) are made for us by the MIDDLETOWN PLATE COMPANY, at Middletown, Ct. Mr. JUDD is well acquainted with this Company and its Officers, and has visited the extensive works frequently, observing the process of manufacture, and he confidently recommends their work as being *just what it professes to be*—and every way reliable. A similar commendation applies to Premiums 138, 139, and 140 from the MERIDEN CUTLERY CO., whose work is first-rate.

No. 116—Flower Vase.—A most beautiful Peacock Pattern, elegantly chased, heavily triple plated in silver without, and gold within so that it will not tarnish by contact with plants in water. Hight, nine inches. We selected this as the most pleasing among a large assortment, from different makers. This and No. 117 are supplied to us by the MIDDLETOWN PLATE CO. We *present* it for 8 subscriptions at $1.50 each, [or, we will supply it for $6.] Expressage to be paid by recipient.

No. 117.—Card Receiver.—Elegantly chased, Deer Pattern. The Receiver is a large dishing silver-leaf, nine inches long, five inches wide. We selected it from many forms as the most beautiful for the price ($6). We will present

it for *Eight* subscriptions at $1.50 each, [or supply it for the price, $6.00.] Receiver to pay the expressage.

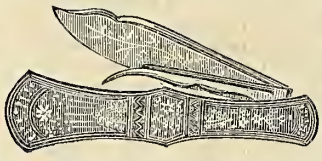


No. 118.—Sugar Tongs.—Beautiful, Crown Pattern, Extra Plate. Price, $2.12. Presented post-paid for 3 subscribers at $1.50 each. [Or, sent post-paid for $2.12].

Premium 119

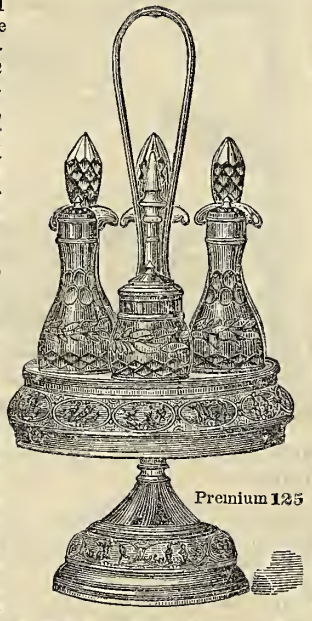
No. 119.—Ice (or Water) Pitcher.—A large, highly Ornamental Article, that will adorn the table, as well as serve a very *useful* purpose, and last many years, with no danger of breakage. Price $13. Triple-plate on white metal, from MIDDLETOWN PLATE CO., will be presented for 14 subscribers, at $1.50 each, this year, will secure the splendid Pitcher.—Only 18 subscribers, at $1.50 each, will secure the **Pitcher** with a *round* **Salver,** of pattern to correspond, (value $17.50).—For only 28 subscribers we will send the **Pitcher** *and* a large 14-inch **Oblong Salver** (value $28.00), which is large enough to hold the Pitcher and two goblets.—For only 35 subscribers, at $1.50 each, we send **Pitcher, Oblong Salver,** and a *pair* of beautiful **Goblets,** silver without, and *gold-plated* inside, (value $34.75). This *Complete Set* is exceedingly desirable, though the Pitcher alone, or that with Round Tray, or with large Oblong Salver, will answer well for *use* and for *ornament.*—[We will also supply the Pitcher, and any one or all the articles above mentioned, at the prices given for each.] Receiver to pay expressage.

No. 120.—Fruit Knife and Nut-Pick, combined in one handle, both opening to spring back. Blade finely chased. Handle, Crown Patteru. Heavily Plated. This is a fine Premium, which we will present for 2 subscribers at $1.50 each. [Or, we will supply and send it post-paid for $1.50].



Nos. 121, 122—Cake Baskets.—Two styles offered, both of *elegant* patterns, very taking, *useful*, and *beautiful* table ornaments—just the thing every one wants. From same makers and same metal as No. **116.** No. **121** presented to any one sending *Ten* subscribers, and No. 122 to any one sending 12 subscribers, at $1.50 each.—[Or we supply No. 121 for $7.50, or No. 122 for $10.] Receiver to pay expressage.

Nos. 123 to 125. Casters.—These are all of *handsome* patterns, richly chased, No. 123 containing *five* cut glass bottles, including mustard, & (the two others *six*, including a Mustard bottle)—useful, necessary, ornamental for every dining table. Same makers, and same metal and plating, as No. 116. Send us *Seven* subscribers, at $1.50 each, and get No. 123, or *Ten* subscribers and get No. 124, or 12 subscribers for No. 125—[Or we will supply No. 123 for $5.25. No. 124 for $7.50, or No. 125 for $10.50.] Receiver to pay expressage.



Premium 125

No. 126.—Pickle Jar and Fork.—The jar is of glass, handsomely mounted in silver-plated frame, with fork attached. It is a very ornamental article for the table, as well as useful, and would prove an acceptable present to a young housekeeper, or, indeed, equally so to the wife, in any home. For 7 subscriptions at $1.50 each we will present it. [Or will forward one on receipt of $5.] Receiver to pay expressage.

Prem. 126

No. 127.—Syrup Cup with Plate.—Every well set table needs at times a syrup cup. This elegant cup stands on a fine plate of suitable design. Only *Eight* subscribers at $1.50 each, will now secure it *free.* [Or, when desired, we will send one on receipt of the price, $6.25.] Receiver to pay expressage.

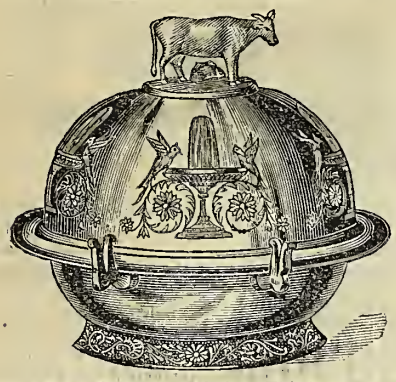
Premium 127 Premium 128

No. 128.—Child's Cup.—(*See Engraving.*)—A beautiful gift for the *Little One.* Triple-plated on the outside, and *gilded* on the inside. It never breaks, and will last for many years—indeed, be a *life-keepsake. Obtain five subscribers,* at $1.50 each, and you can secure one of these beautiful cups for your own Child, or a name-sake, or other favorite.—[Or we will forward one on receipt of price, $3.50.] Receiver to pay expressage.

No. 129.—One Pair Salt Cellars.—These are engraved glass, with heavily plated Stands, and will be found both useful and ornamental. Furnished by the same Company as No. 116. *Eight* subscriptions at $1.50 each will secure these [or we will supply the pair for $5.50, post-paid]. If desired, we will furnish *one* for half the number of subscribers.

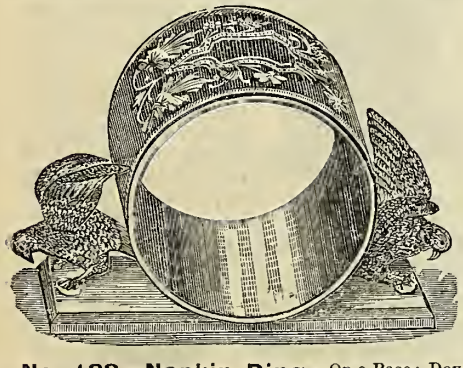
No. 130.—Butter Knife.—Beautiful form, Crown Pattern. Price, $1.25, and worth it, as it is heavily Triple-Plated on white metal, and made for long service. We could supply as good-looking knives, called "extra

plate," for 50 to 75 cents, but this is worth a dozen of them, and we prefer it at the extra price. (This remark applies to all the articles here offered). We send this post-paid, for *two* subscribers at $1.50 each, [or, for $1.25].



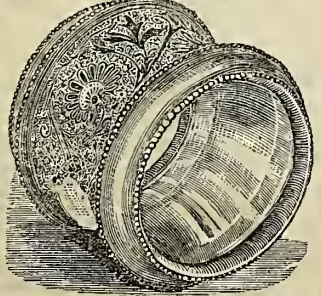
No. 131.—Butter Dish.—This is a very pretty pattern; it is chased and ornamented, with Rests for butter knife, and is a good and useful article, and one easily obtained. Furnished by the same Company as No. 116. *Six* subscriptions at $1.50 each will secure this [or we will supply it for $4.25]. Receiver to pay expressage.

No. 132.—Individual Pepper and Salt Caster.—This is a very neat and useful article; it is gilt-lined, and heavily plated. Furnished by the same Company as No. 116. *Five* subscriptions at $1.50 each will secure this [or we will supply it for $3.50, post-paid].

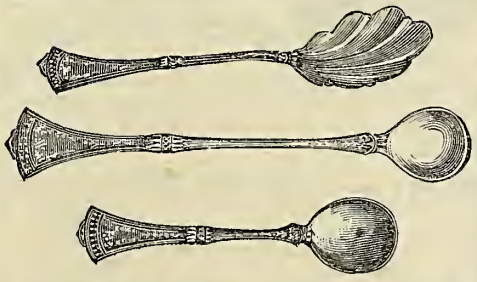


No. 133.—Napkin Ring.—On a Base; Dove pattern; a very fine one for the price, $1. Triple plated. Presented post-paid for two subscriptions at $1.50 each.

No. 134.—Napkin Ring.—A new pattern, of latest style. The form is shown in the engraving. Heavily plated.—We will present this, post-paid, to any actual subscriber who will procure and forward one *new* subscriber at $1.50, [or we will send it post-paid for 75 cents.] Both of these fine Napkin Rings are supplied to us by the Middletown Plate Co.



No. 135.—Spoon Holder.—This is chased and gold-lined; it is heavily plated, and will be found always useful. Furnished by the same Company as No. 116. *Seven* subscriptions at $1.50 each will secure this [or we will supply it for $5.00, post-paid].

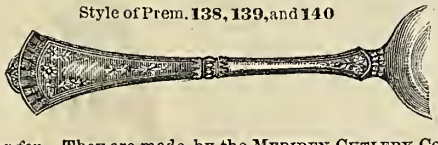


No. 136.—Sugar Shell—Mustard Spoon—Salt Spoon.—All beautiful; Crown Pattern, Double-Plated. All *Three* presented for three subscribers at $1.50 each, and sent post-paid. [Or, will be sent post-paid for $2.00]. This, as well as the Premiums above, is supplied by the Middletown (Ct.) Plate Co.

No. 137.—Watch Stand.—A pretty present for a lady; it is heavily plated, velvet-lined, and finely finished. Furnished by the same Company as No. 116. *Seven* subscriptions at $1.50 each will secure this [or we will supply it for $5.00, post-paid].

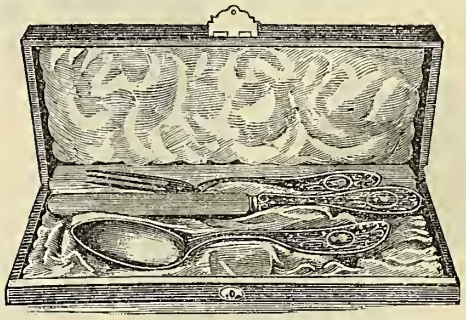
No. 138.—One Dozen Tea-Spoons.—No. 139.—One Dozen Table-Spoons.—These are all of the elegant *Crown pattern*, fine metal, **triple plated,** and for beauty of design, and excellence of workmanship, will be found unsurpassed by solid silver. These spoons are far *cheaper* than many others we have found at quarter the price, and *well worth canvassing for*. They are made by the Meriden Cutlery Co., No. 49 Chambers St., N. Y. City. *Nine* subscribers sent us at $1.50 each will secure **12** *Tea* Spoons (worth $7.25); *sixteen* subscribers, at $1.50 each, will secure **12** *Table* Spoons (value $14.50) [We will supply the Tea Spoons for $7.25 per dozen, and the Table Spoons for $14.50; or a set of six for half these prices.] Receiver to pay expressage. ☞ We will supply a set of *half* a dozen Tea-spoons for 5 subscribers, or a set of *half* a dozen Table-spoons for 9 subscribers, at $1.50 each.

Style of Prem. 138, 139, and 140



No. 140.—One Dozen Table-Forks.—*The same description and remarks apply to these as to No.* 139, and they are from the same makers. (We select as Premiums only such articles as we can *warrant* in quality and price, and these the most desirable.) Price $14.50. Presented *free* to any one sending only 16 subscribers at $1.50 each, or a set of six for 9 subscribers.—[We will supply one dozen for $14.50, or a set of six for $7.25.] Receiver to pay expressage, if not delivered at this office.

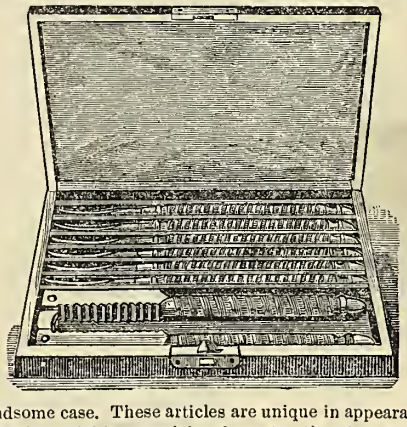
No. 141.—Child's Set: Knife, Fork, and Spoon.—This is Standard Silver Plated, white metal base, medallion pattern, in satin-lined morocco



case; *an elegant present.* Supplied by the Meriden Cutlery Co. *Four* subscriptions at $1.50 each will secure it *free.* [Or we will send a set on receipt of the regular price, $3.00.]

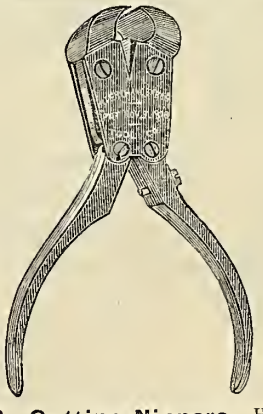
☞ If to go by mail, send us 15 cents for postage & packing

No. 142.—Nut Picks and Cracker.—One-half dozen Nut Picks and a Nut Cracker, put up in a



handsome case. These articles are unique in appearance, and substantial in material and construction, being made of steel throughout, chased with handsome designs, and heavily nickel-plated. By same manufacturer as No. 49. For *three* subscriptions, at $1.50 each, we will present this set and case. [Or we will supply them for $2.25.]

☞ If to go by mail, send us 15 cents for postage & packing.



No. 143.—Cutting Nippers.—Hall's Patent Double **Compound Lever,** giving great cutting power with use of little strength of hand. Length, 7 inches. Jaws open to cut wire $^5/_{32}$ inch diameter. Made of the finest quality of steel, by the Interchangeable Tool Company. Furnished to us by Joseph T. Farrington, 32 Howard St., N. Y. These Nippers are just the thing for cutting Fence Wire, and useful also in cutting wires for many other purposes; very handy in any Tool Chest. *Three* subscriptions at $1.50 each, will secure these, post-paid. [Or we will mail them, p.p., for $2.1

Premium 144

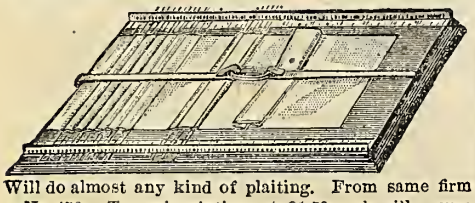
No. 144.—"Granite" Tea Set.—Tea Pot—a Sugar Bowl, Cream Pitcher, Slop Bowl and Spoon Holder. They are perfectly fire-proof, being made of Sheet Iron, coated with the Perfection Granite Coating, giving them a mottled finish, which is very pleasing and attractive. They are finished in Nickel-plate mountings and Fire Proof Bands, and the style represented in the engraving is the one we offer. These are furnished by MANNING, BOWMAN & Co,, 57 Beekman St., N. Y. *Nineteen* subscriptions at $1.50 each will secure this entire set [or we will supply it for $15.50]. Receiver to pay expressage.

No. 145.—Coffee Pot.—This is made of the same material as No. 144. It is Fire Proof, and will hold 5 pints; it is finished in Nickel plate with Fire Proof Bands. The engraving is a good representation of this Premium. From same firm as No. 144. *Four* subscriptions at $1.50 each, will secure this [or we will supply it for $3.00]. Receiverto pay expressage.

No. 146.—Seamless Water Pitcher.—This is made of the same material as No. 144. It is finished in Nickel plate mountings with Protection Bands. For the style of this Premium see engraving. From same firm as No. 144. *Eight* subscriptions at $1.50 each will seenre this [or we will supply it for $6]. Receiver to pay expressage.

No. 147—Butter Dish.—This is made of the same material and finish as No. 144. It has Nickel-plated Mountings and Protection Bands. From same firm as No. 144. *Six* subscriptions at $1.50 cach, will secure this [or we supply it for $4.00]. Receiver to pay expressage.

No. 148.—The American Plaiter.—Made of Black Walnut, 18 inches long, 8 inches wide, brass strips along the sides, rubber tension, and 72 needles.

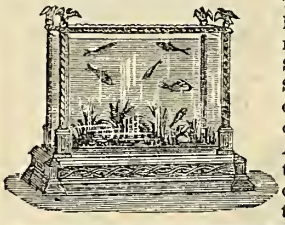


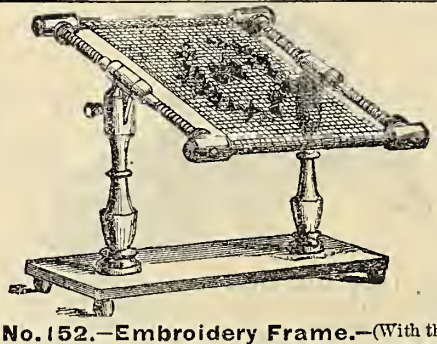
Will do almost any kind of plaiting. From same firm as No. 156. *Two* subscriptions at $1.50 each will secure this post-paid [or we will supply one for $1.50, post-paid.]

No. 149.—China Tea Set.—This is French China, white, with gold band decoration, and consists of 56 Pieces, viz.: Tea Pot, Sugar Bowl, Cream Cup, Slop Bowl, Tea Plates, Sauce Plates, Cups and Sancers, Bread and Cake Plates, all securely packed and boxed for shipment. From JAMES M. SHAW & Co., 25 Duane St., N. Y. *Seventeen* subscriptions at $1.50 each secures this [or we supply it for $13.00.] Receiver pays expressage.

No. 150.—Work-Box.—This is made of finely polished wood, cover inlaid, lined with velvet; contains Seissors, Needle - Case, Piecer, Bodkin, Thimble, and has a Mirror in the cover; has Lock and Key. Size, 9½×6½ inches. From same firm as No. 58. Five subscriptions at $1.50 each, will secure this [or we will supply it for $3.50]. Expressage paid by recipient.

No. 151—Aquarium—Many homes can be made more cheerful and entertaining by the introduction of little things to please the eye and at the same time afford instruction to the young. All over the country there are those who have abundance of flowers and other ornaments, and who would gladly add representatives of animal life, if they knew where they could get the proper conveniences for keeping the same at a moderate cost. To meet this want, we have made arrangements with Messrs. STEPHEN FREEMAN & SON, of Racine, Wisconsin, to offer as one of our Premiums an Aquarium as shown in the cut. This one is designed for a shelf or table, and holds 5½ gallons of water—large enough for keeping quite a large number of fish and other marine animals and plants. Presented for 10 subscriptions at $1.50 each [or we will supply it for $8]. Freight or express paid by receiver.



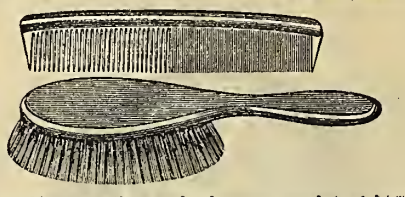


No. 152.—Embroidery Frame.—(With the Embroidery Frame is also suitable canvas and 3 Design Books.) It is made of cherry wood, highly polished. The Frame is in size, 9x10 inches. The Canvas on which the embroidery is to be done, is first fastened to the frame, as seen in the cut, and then, by turning the screws of the Frame, the Canvas is made tight, so that designs can be worked most beautifully, and with great case and rapidity. Sent *free* and post-paid for 2 subscribers at $1.50 each; [or we will supply it post-paid for $1.10.]

No. 153.—Extension Step Ladder.—This is made of Pine, 3 feet high, when closed, and 6 ft. when extended. From same firm as No. 156. *Five* subscriptions, at $1.50 each, will secure this [or we will supply it for $3.25.] Receiver to pay expressage.——A very handy article for use about the house; for picking fruit, and many other purposes; can be set aside in small space when not in use.

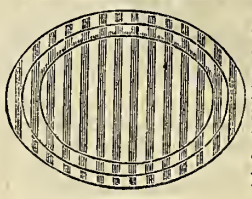
No. 154.—Metallic Hair Brush.—Made of Rubber, with Ornamented Back, the Bristles are Metallic Wire. From same firm as No. 58. *Two* subscriptions at $1.50 each, or $1.25 cash, will secure this, post-paid.

No. 155.—Celluloid Brush and Comb.—These are made of white Celluloid, Brush of white bristles; light, strong, and durable; very handsome; hardly distingnishable from pure white ivory. Price, $4.75. Only *Six* subscriptions, at $1.50 each, secures

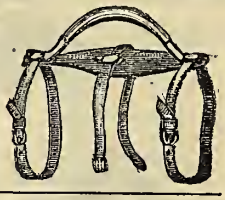


these. [Or we will supply them on receipt of $4.75.] ☞ If to go by Mail, sent us 10 cents for postage & packing.

No. 156.—Set of Folding Table Mats.—Made of alternate stripe of light and dark wood, oval-shaped and polished, (six in set.) From J. H. BALDWIN & Co., 21 Murray St., N. Y. *Two* subscriptions at $1.50 each, will secure these (or we will supply them for $1 p-paid.)

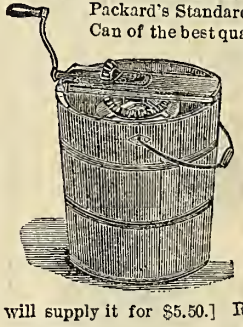


No. 157.—Shawl-Strap.—This has three straps, made of leather, with nickel - plated mountings. From SPELLMAN BROS., 355 and 357 Broadway, N. Y. Price, $1.10. *Two* subscriptions at $1.50 each, will secure this post-paid [or, we will supply and send it post-paid for $1.10].

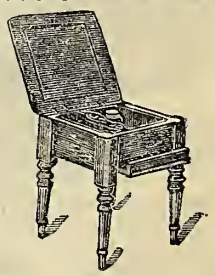


No. 158.—Crumb Tray and Brush.—The Tray is handsomely palnted and ornamented, and the Brush matches the Tray. From same firm as No. 156. *Two* subscriptions at $1.50 each will secure these [or we will supply them for $1.00] post-paid.

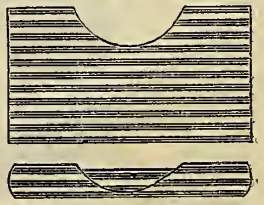
No. 159.—Ice Cream Freezer.—This is a Packard's Standard Freezer; capacity 4 quarts. Can of the best quality, heavily coated with tin plate; has iron bottom of a new pattern; tubls of white cedar, with galvanized hoops. The cover of tub, containing gear wheels, is made of hard-wood, and the fittings are of malleable iron. Very convenient for home - made Ice Cream. From same firm as No. 156. *Eight* subscriptions at $1.50 each will secure this [or we will supply it for $5.50.] Receiver to pay expressage.



No. 160.—Blacking Case.—Made of Black Walnut, finely finished; top carpeted, having a drawer for brushes, blacking, etc. A great convenience as compared with having blacking and brushes lying aronnd anywhere and everywhere, and no place to use them. From same firm as No. 156. *Four* subscriptions at $1.50 each will seeure this [or we will supply it for $3.00.] Receiver to pay expressage.



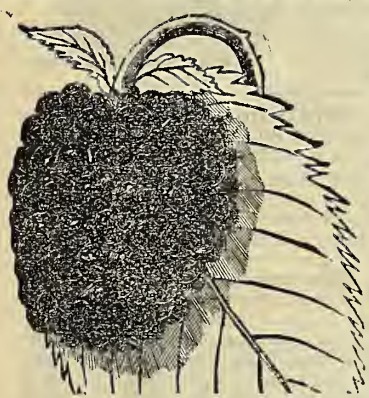
No. 161.—Lady's Folding Lap Board.—Constructed of alternate strips of Black Walnut and Pine, securely fastened to cloth, making it flexible; can be folded up. Nicely finished, and has a yard measure stamped npon it. From same firm as No. 156. *Two* subscriptions at $1.50 each will secure this post-paid [or we will supply one for $1.50, post-paid.] Lower cut shows it rolled up.



No. 162.—The Travers' Patent Hammock.—This is made of strong Twine, Brass Mounted, Cardinal Binding, and is very durable. From J. P. TRAVERS & SON, 46 Beekman St., N. Y. Price, $3.00. We will present this for *four* subscriptions at $1.50 each. [Or we will supply it for $3.00]. Receiver to pay carriage. ☞ If to go by mail, send us 40 cents for postage & packing.

No. 163.—Hammock.—Made of colored twines; strong, durable, and useful. From same firm as No. 162. We will present this for 2 subscriptions at $1.50 each. [Or we will supply it on receipt of $1.50.] ☞ If to go by mail, send us 24 cents for postage & packing.

No. 164.—Choice Small Fruit Plants, to wit: **Strawberries, Raspberries, Blackberries, Grapes, Currants, and Gooseberries.**—For 2 subscribers at $1.50 each, we will send Plants to the amount of $1.00, as described below.



For 4 subscribers at $1.50 each, we will send Plants to the amount of $2.00.

For 6 subscribers at $1.50 each, we will send Plants to the amount of $3.00.

Any one desiring the above Plants, as a premium, can send a Postal to J. T. LOVETT, Little Silver P. O., Monmouth Co., N. J., for his Catalogue (which will be sent free of charge), containing accurate descriptions and prices of the different varieties, full instructions for preparing the soil and planting, and much other valuable information. These plants will be sent, by mail, post-paid. We will also supply any of the plants named, at the prices and terms given in the Catalogue. (These Premiums are for the plants selected *at the catalogue rates by the dozen*, and not by hundred or thousand rates.)

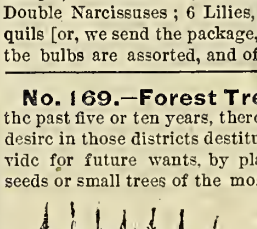
No. 165.—Choice Garden, Flower, and Agricultural Seeds.—We have made an arrangement with Messrs. D. M. FERRY & Co., Detroit, Michigan, which enables us to furnish as premiums, Seeds in almost endless variety, and they will be sent *post-paid* anywhere in the United States or British America, and to any other part of the world on receipt of two cents per packet extra, for extra postage. This firm, established in 1856, stands in the front rank of seed-growers in the United States and in the world. They exercise the utmost care in growing and preparing their seeds for market; hence their seeds seldom fail. Those who desire seed Premiums can rely on having the very freshest and best grown in every instance. The seeds are put up in packets, with full directions how and when to plant, and on the packet is a lithograph *in colors* of the flower or fruit the seeds contained therein will produce. Our lady friends will certainly appreciate this opportunity to obtain choice flower and garden seeds of different varieties. Persons can send their subscriptions and then secure their premiums at any time, by an order from us, which will be faithfully honored by D. M. Ferry & Co., any time before July 1st, 1881. All entitled to one of these Premiums, can send a Postal to D. M. Ferry & Co., and receive *free* their large and beautiful 150-page Illustrated Catalogue, containing a full description and price-list of Garden, Flower, and Agricultural Seeds of every variety, and from this select any seeds desired. Any subscriber sending *one* new subscription at $1.50, may select seeds amounting to 75 cts., at price in D. M. Ferry & Co.'s catalogue. For *two* subscriptions at $1.50 each, we will present seeds to the amount of $1.50. For any *three* subscriptions at $1.50 each, we will present seeds as above, to the amount of $2.25. For *four* subscriptions at $1.50 each, we will present seeds as above, to the amount of $3. For *five* subscriptions at $1.50 each, we will present seeds as above, to the amount of $4, and we will *add* $1 worth of seeds for each *additional* subscription (above 5), in one club, at $1.50 each—all seeds sent post-paid, as first stated above, when desired. We will also supply any of the seeds named at catalogue prices, and send them post-paid. [These premiums are for seeds in packets only, and not for seeds sold by weight or measure.]

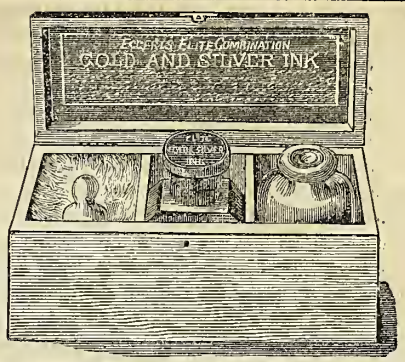
Nos. 166 to 168.—Beautiful Flower Bulbs, delivered free at your post office. These three Premiums are put up for us by Messrs. B. K. BLISS & SONS, 34 Barclay St., New York, whose Horticultural establishment and whose reputation are among the very best in the country, and too well known to need special mention by us here. The bulbs in each assortment are selected by them, and our friends can rely upon getting them as represented. For *two* subscribers at $1.50 each, we will send post-paid, Premium No. 166, which comprises bulbs as follows: 3 Hyacinths: 12 Tulips; 12 Crocuses; 6 Narcissuses [or, we will send the package, post-paid, for $1.00].

For *four* subscribers at $1.50 each, we will send post-paid, Premium No. 167, comprising 6 Hyacinths; 20 Tulips, double and single; 25 Crocuses; 12 Narcissuses; 3 Lilies, distinct varieties; 12 Snowdrops [or, we will send the package, post-paid, for $3.00].

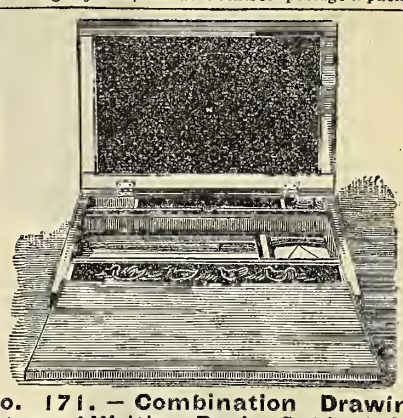
For *seven* subscribers at $1.50 each, we will send, post-paid, Premium No. 168, comprising 12 Hyacinths; 25 Tulips; 50 Crocuses; 2 Polyantbus Narcissuses; 6 Double Narcissuses; 6 Lilies, distinct varieties; 6 Jonquils [or, we send the package, post-paid, for $5.00]. All the bulbs are assorted, and of very desirable varieties.

No. 169.—Forest Trees by Mail.—During the past five or ten years, there has been a commendable desire in those districts destitute of forest trees to provide for future wants, by planting each season some seeds or small trees of the most desirable kinds. In order to encourage such an enterprise in every section of the country destitute of timber, we have arranged with Messrs. ROB'T. DOUGLAS & SONS, of Waukegan, Ill., (who have been engaged for more than thirty years in planting and raising forest trees,) to offer the following parcels of trees, that can be transported *by mail*, as premiums to subscribers to the *American Agriculturist*. We will forward *post-paid* to any address, any *one* of the 18 parcels named below, on receipt of *two* subscriptions at $1.50 each, or will forward any one of the parcels post-paid for $1. Parcel, (No. 1.)—100 European Larch, from 8 to 10 inches in hight; (No. 2.)—75 ditto, 12 to 18 inches; (No. 3.)—100 White Ash, 10 to 12 inches; (No. 4.)—100 Hardy Catalpa, 10 to 12 inches; (No. 5.)—50 Black Cherry, 12 inches, transplanted; (No. 6)—100 Scotch Pine, 4 to 6 inches; (No. 7.)—100 Ailanthus, 10 to 12 inches; (No. 8.)—50 Hard Maple; (No. 9)—50 Hickory Elm (Ulmus racemosa), 1 year old. *For Hedges and Ornamental Planting.* (No. 10.)—50 Red Maple, 10 to 12 inches; (No. 11.)—100 Norway Spruce, 6 to 9 inches; (No. 12.)—50 White Spruce, 6 to 9 inches; (No. 13.)—100 American Arbor Vitæ 6 inches; (No. 14.)—25 Heavy-wooded Pines, 4 to 6 inches; (No. 15.)—50 Norway Maple, 6 inches, transplanted; (No. 16.)—50 Balsam Fir, 6 inches; (No. 17.)—50 Red Cedar, 6 to 9 inches; (No. 18.)—50 Hemlock Spruce, 6 to 9 inches. These trees will be securely packed, and *sent free by mail*, at the proper planting season. Messrs. Douglas & Sons have had great success in sending trees by mail.





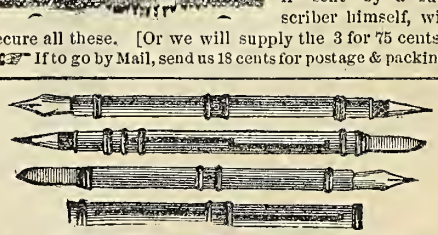
No. 170.—Eggert's Elite Combination Ink.—A neat box, containing a bottle of Ink and three boxes of Powders. The ink is used as ordinary ink, and the powder of the color required is then applied with the powder-puff, which comes with the box, and the writing appears either as gold, silver, or copper. From WILLY WALLACH, 36 Park Row, New York. Presented to any one himself a subscriber who sends one other subscription, at $1.50.—[Or we will supply it for 75 cents.] ☞ If to go by Mail, send us 10 cents for postage & packing.



No. 171.—Combination Drawing-Slate and Writing Desk.—Contains six drawing copies, paper and envelopes, ink-bottle, pen-holder, lead pencil, slate pencil, and rubber. From same firm as No. 170. Price, $1.50. For *two* subscriptions at $1.50 each, we will present this [or we will supply it for $1.50]. Expressage in either case to be paid by receiver.

No. 172.—Three Premiums in One.—

1st. Black Slate, covered frame. — 2d. *Scholar's Companion*, a Tin Box, containing Pen-Holder, Lead Pencil, Slate Pencil, Rubber, Sponge, and Chalk Crayon — 3d. *Hemp-Knitted School Bag*, strong and durable; length, 14 inches; depth, 11 inches. From same firm as No. 170. One *new* subscription, at $1.50, if sent by a subscriber himself, will secure all these. [Or we will supply the 3 for 75 cents.] ☞ If to go by Mail, send us 18 cents for postage & packing.



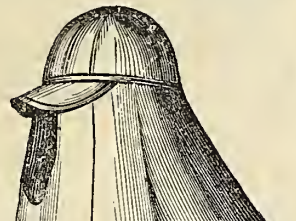
No. 173.—Three Premiums in One.—1st. *Lloyd's Combination Pen-Holder.* This is a Pen-Holder, with pen and lead pencil, ink-eraser and pen-knife combined.—Price, 20 cents. 2d. *Book Clamp.*—This is a very useful and convenient article for carrying books. Price, 30 cents. 3d. *Transparent Drawing Slate.*—Six pictures accompany the slate. Price, 15 cents. Furnished by E. G. SELCHOW & Co., 41 John St., N. Y. Price for all, 65 cts. One *new* subscription at $1.50, sent by any subscriber, will secure all three of these [or we will supply them for 65 cts.] ☞ If to go by mail, send us 15 cents for postage & packing.

Nos. 174 to 180.—Valuable Rubber Articles.—One may almost say that India Rubber now contributes more to Human Health, Comfort, and Convenience, than any other single natural product—iron excepted. Any one would be astonished to see the immense *variety* of articles at the great establishment of the GOODYEAR'S RUBBER M'F'G Co., and GOODYEAR'S INDIA RUBBER GLOVE M'F'G Co., Nos. 488, 490, 492 Broadway, New York (established in 1844). (Most of them can also be found at 205 Broadway). From the above great stock we have selected seven most excellent and useful articles, which will be highly appreciated by our readers.

N. B.—These, similarly named, similar looking, are offered at much lower prices, but they are greatly inferior in quality and wear. Those we selected are the very best, highly flexible, strong, durable, worth many times over the inferior lower price fabrics.

No. 174.—Rubber Sack Coat, (Gentlemen's) "ZEPHYR." The great utility of this need hardly be specified. It is strong, durable, entirely water-proof, and yet weighs only about 1 lb. or 16 to 20 ounces, according to size; can be packed in small space; is sent packed in a rubber pouch or bag, for carrying it in. Made in various lengths and sizes. In ordering, give hight, weight, and size around breast under the arms, in inches. From the makers named above. This will be presented to any one sending *Nine* subscribers at $1.50 each [or supplied for $7.50]. Sent post-paid in either case.

No. 175.—Rubber Cap, with Cape.—A capital thing in a storm, the cape coming down over the neck and shoulders, to shed rain perfectly. The front-piece acts as a roof over the eyes and face, with a sufficient opening for seeing and breathing freely. Weight only 6 ounces. From same makers as above. It will be presented, post-paid, for sending us *two* subscriptions at $1.50 each [or we will supply it post-paid for $1.00.] (Send size of hat you usually wear.)



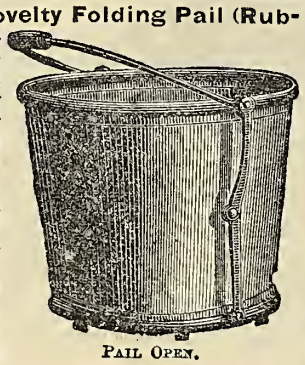
No. 176.—Men's Leggins (Rubber).—Nothing could be better than these for a wet day, wet grass, etc., as they keep the pantaloons dry and comfortable. Entirely water-proof, strong, and durable, and yet weighing only 5 ounces for the medium size. Those ordering, should state whether desired *small*, *medium*, or large size. From same makers as above. We present and forward a set post-paid for 3 subscriptions at $1.50 each [or we supply them, post-paid, for $2]. (With these, the Rubber Sack-Coat and Cap, one will be "storm-proof," if the feet be protected; yet the weight of the whole is only 20 ounces, or less than 2 lbs. Total cost of all these, $10.50. And the *whole* will be presented, and all sent post-paid, for 12 subscriptions at $1.50 each [or we will supply them, post-paid, for $10.50].

No. 177.—Ladies' Zephyr Waterproof.—This is of first-rate quality, and a most desirable article for every woman. It is entirely water-proof, lasting, and yet so light that it can be rolled up and carried in the pocket. (Mailed in a small rubber pouch, that may be used for carrying it in.) They vary from 50 to 62 inches in length. In ordering, give measure from neck to bottom of walking-dress, or the length desired from the neck down. From same makers as above. Price $6. We will *present* one for *eight* subscriptions at $1.50 each, [or supply one for the price, $6.00], and send post-paid.

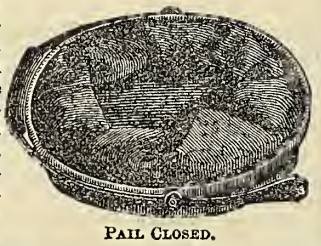
No. 178.—Rubber Camp-Blanket, or for any other use requiring a water-proof *cover*, or *under* blanket. Size, 3¾×6 feet (45×72 inches); weight, 2¼ pounds (40 ounces). Same makers as above. This will be presented for *three* subscribers, at $1.50 each [or supplied for $1.75]. Sent by express unpaid, or sent by mail post-paid for 25 cents extra (one-half the postage.)

No. 179.—Rubber Air Pillow.—This is very handy to carry rolled in small space (weighs only 10 ounces); can be inflated in a moment, furnishing a soft, healthful pillow, with sufficient depression in the middle to make it lie easy. From 488-492 Broadway, as above. It will be presented, post-paid, for *three* subscriptions at $1.50 each [or we send it post-paid, for $2.00].

No. 180.—Novelty Folding Pail (Rubber).—This is a most valuable article. The Pail is full size, made of strong enamelled Rubber Cloth, coated on both sides, with top and bottom hoops, supported by jointed side braces, with hinges like carriage-top braces. It is durable, and adapted to all purposes of any large pail, and when not in use it folds down to only an inch or so in thickness, so that it can be carried in small space, under the cushion of a carriage or buggy, out of the way and out of sight, but always ready for instant use. Price $2.50. We will present one for *Four* subscriptions at $1.50 each. [Or supply one for $2.50.] It will be sent by express unpaid (or it will be sent post-paid by mail if 42 cents extra be furnished.)

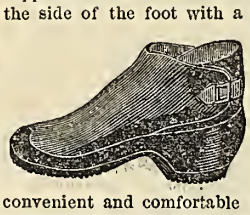


PAIL OPEN.



PAIL CLOSED.

No. 181.—Arctic Overshoes.—These are made by L. CANDEE & Co., New Haven, Conn., and are supplied with the Patent Back Strap, which fastens on the side of the foot with a Buckle, thus bringing the openings to the rear, so that when walking in the snow, it cannot force its way inside. They are well made, with lined Cloth Uppers, and Rubber Soles of double thickness, and will be found more convenient and comfortable than the old style Arctic. 6 subscriptions at $1.50 each will secure them [or we will supply them for $3.50.] If to go by mail, send forty cents to pay postage. Always send size of shoes worn.



No. 182.—One Pair Skates.—This style is All Clamp, with polished blades, blued top, steel sole and heel plates, double-acting heel and toe Clamps. From PECK & SNYDER, 124 Nassau St., N. Y. 4 subscriptions at $1.50 each will secure them [or we will supply them for $2.50.] Receiver to pay expressage. Length 8 to 12 in.

No. 183.—One Pair Skates.—This style is the N. Y. Club. From same makers as No. 182. Is blued and made of steel. Size 8 to 11½ inches. 5 subscriptions at $1.50 each will secure these [or we will supply them for $3.25.] Receiver to pay expressage.

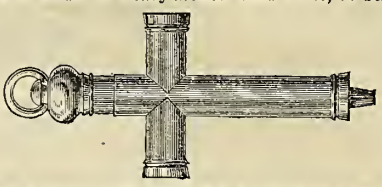
No. 184.—One Pair Skates.—This style is the Patent Self-adjusting American Club, and when once adjusted, remain so. They are made of blued steel, foot-plates and Clamps, and polished blades. From same firm as No. 182. Size 8 to 11½ inches. 8 subscriptions at $1.50 each will secure these [or we will supply them for $5.00.] Receiver to pay expressage.

No. 185.—Self-Adjusting, gold plate, Watch Key.—This Key is universally acknowledged by Practical Watchmakers to be the best ever offered to the trade. Several times, while on a summer trip in the country, we were able to accommodate friends, who had lost or mislaid their own watch keys, with one that would *fit any watch*, and it was one of these neat little things of Birch's invention. Each Key is thoroughly tested before being sold, and the whole is manufactured under the immediate supervision of the

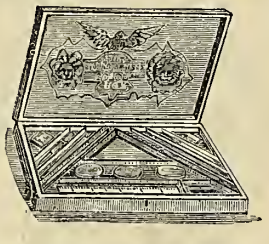
Prem. 185

Patentee. *Two* subscribers, at $1.50 each, will secure post-paid, the neat gold plate Key offered as Premium. For *three* subscribers, we will send *free* the more expensive style, celluloid, with gold-plated tips, retailed at $1.50. Made by J. S. BIRCH, 38 Dey St., N. Y.—[Or we will send one, post-paid, for $1.00; or the finer style for $1.50.]

No. 186.—Watch Key (Cross Pattern).—This is made of Heavy Rolled Gold Plate, is self-adjusting, the same as No. 185. From same firm as No. 185. *Two* subscriptions at $1.50 each will secure this post-paid [or we will supply it and send it post-paid for $1.50].



No. 187.—Paint Box.—This contains 24 Cakes assorted Paints, 3 cups, 2 brushes, pencil, rubber, 6-inch rule, etc., all packed in a polished wood box; cover inlaid. From same firm as No. 188. *Two* subscriptions at $1.50 each will secure this [or we will supply it for $1.50.] In either case send 25 cts. for postage.



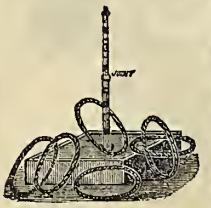
No. 188.—Paint-Box.—This box contains twenty Cakes Assorted Paints, four Cups and three Brushes, all packed in a stained wood box, carved cover, with hinges. From STIRN & LYON, 20 Park Place, New York. Sending one *new* subscription at $1.50, secures this [or we supply it for 75c.]

☞ If to go by mail, send us 10 cents for postage & packing.

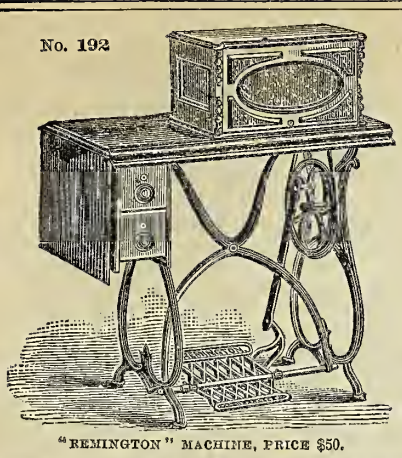
No. 189.—Magnet; Horse-shoe form, with armature; of hard steel and permanent; strong for its size; length 5 inches. Rub a pocket-knife blade on the *N* end, hang it at the middle with a thread, and the open blade will turn and point south, or rub it on the other and it will point north. Needles and other articles of hardened steel will become magnets by rubbing them on one of the ends of this magnet, so that they will pick up and hold iron or steel. A pretty scientific toy for any one.—Any one himself a subscriber will be presented with this post-paid, for sending another subscriber at $1.50 a year [or we will send it post-paid for 60 cents.] It is well worth having.

No. 190.—Three Premiums in One.—1st. Ornamental Tin Lunch Box, length 7 inches, width 4 inches, depth 2½ inches.—2d. Metal Folding Drinking Cup, which folds up, and packs in a small tin box.—3d. Farrell's Combination Match Box, nickel plated, with Candlestick and Candle. From same firm as No. 170. *One* subscription at $1.50 each, will secure them [or we supply them for 75 cents.] Send ten cents for postage.

No. 191.—Ring Toss.—This is a most interesting game for both old and young, can be played on lawn or parlor. The game is to throw the Rings over the target post at a given distance. All packed in a strong box together. From same firm as No. 173. *Two* subscriptions at $1.50 each will secure this [or we will supply it for $1.25.] In either case send 20 cents for postage.



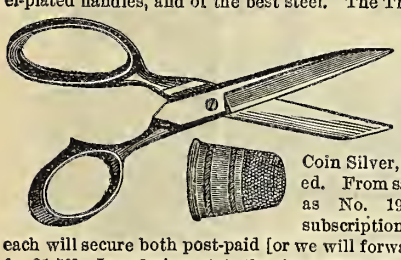
No. 192



"REMINGTON" MACHINE, PRICE $50.

No. 192.—Sewing Machine.—The **Remington Sewing Machine Company,** Ilion, N. Y., or 281 Broadway, N. Y. City, manufacture a machine which has sprung rapidly into favor, as possessing a most desirable combination of good qualities, namely, light running, smooth, noiseless, rapid, durable, with perfect Lock-Stitch. Its use is readily acquired, it is well constructed, and beautiful in design. We send the $50 machine. Presented this year for 42 subscribers, at $1.50 each. Carriage to be paid by receiver.

No. 193.—Pair of Scissors with Silver Thimble.—The Scissors are 7 inches in length, nickel-plated handles, and of the best steel. The Thimble is

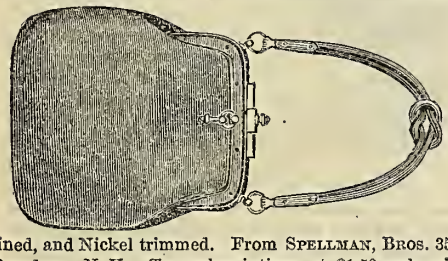


Coin Silver, warranted. From same firm as No. 19. *Two* subscriptions at $1.50 each will secure both post-paid [or we will forward them for $1.50]. In ordering, state the size of Thimble desired.

No. 194.—Case of Scissors.—The Case is of morocco, handsomely gotten up, and lined with velvet and satin, containing *three first quality scissors*, crocus finish, length 4, 5, and 5½ inches, respectively; a very pretty and useful Premium. Made by the UNITED

STATES STEEL SHEAR COMPANY, West Meriden, Ct., whose manufactures stand deservedly very high in the market. Furnished to us by the MERIDEN CUTLERY CO., 49 Chambers street, New York. Ladies can get this premium *free*, forwarded post-paid by mail, by sending a club of *Six* subscribers, at $1.50 each.—[Or we will send this set, pre-paid, on receipt of the price, $4.00.]

No. 195.—Lady's Handkerchief Bag.—This is made of Black Leather, Morocco finished, Kid



lined, and Nickel trimmed. From SPELLMAN, BROS. 355 Broadway, N. Y. *Two* subscriptions at $1.50 each, will secure this post-paid [or we will supply it for $1.00, p.-p.]

No. 196.—Sinclair's Young Puritan Rocker and Writing Table.—It will be seen at once, from the engraving of this chair in use, that it is

designed for comfort and convenience, and the object aimed at has evidently been fully reached in these very easy, useful, strong, and roomy chairs. They are made by Mr. F. A. SINCLAIR, Syracuse, N. Y. The style we offer, including the Writing Table Attachment, price ($9.25), will be presented for 11 subscribers, at $1.50 each. Freight or expressage from factory to be paid by receiver.

Open. Closed.

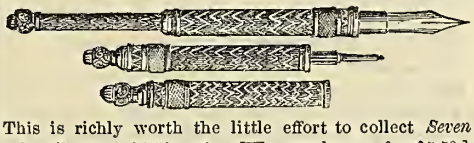
No. 197.—Patent Magic Bell Head Pencil.—This is a very pretty and convenient gold-plated Pocket Pencil, which is extended or closed by pulling or pressing the head. This premium and the seven which follow, are from the well known manufacturers, LUDDEN & DOW, 194 Broadway, New York. Mr. Ludden has been in the business 38 years, and we know and can highly commend his work. For *Two* subscribers sent us at $1.50 each, we will present one and send it post-paid, [or we will send one, post-paid, for $1.50.]

Open. Closed.

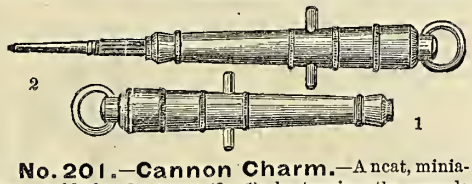
No. 198.—Magic Charm Pencils.—These are gold-plated and very beautiful. We offer two kinds, the smaller, an exceedingly tasteful thing for ladies, and a larger style for gentlemen. Each style has a ring at the head for attaching to a watch-chain. By same makers as No. 197. *Three* subscribers, at $1.50 each, will secure the Ladies' size, *free*, post-paid, and 4 subscribers the Gentleman's size [We send the ladies' size, post-paid, for $2, and the gentleman's size for $2.75.]

No. 199.—Gold Pen, Telescopic Case.—Gold-plated case containing No. 4 Diamond-pointed Gold Pen, warranted. Same makers as No. 197. Only *Four* subscribers sent to us at $1.50 each, will secure this splendid article *free* and post-paid. In sending for this pen indicate how you wish the pen—whether you desire it to be stiff, medium, or limber.—[We will send one of these fine Pens, post-paid, on receipt of $2.50.]

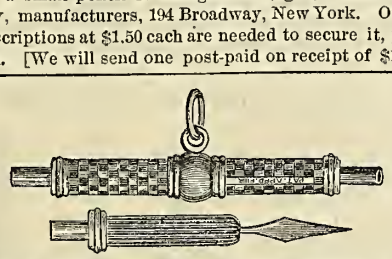
No. 200.—Gold Pen and Pencil (Combined.)—A very elegant premium. The handsome, heaviest gold-plated Holder contains a No. 7 Improved Telescopic Pen and Pencil. In lined leather case. The pen *slides* out, the pencil is thrown out by drawing back the *pencil head*; chamber for leads in top. Same makers as No. 197.



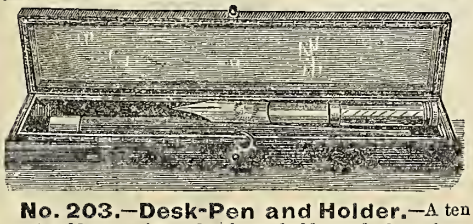
This is richly worth the little effort to collect *Seven* subscribers at $1.50 each.—[We supply one for $5.50.]
☞ If to go by Mail, send us 14 cents for postage & packing



No. 201.—Cannon Charm.—A neat, miniature gold-plated cannon (fig. 1); by turning the muzzle end, a small pencil is brought out (fig. 2). LUDDEN & DOW, manufacturers, 194 Broadway, New York. Only 2 subscriptions at $1.50 each are needed to secure it, post-paid. [We will send one post-paid on receipt of $1.25.]



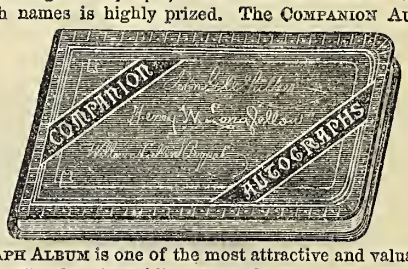
No. 202.—Watch-Bar, Tooth-pick, and Watch Key, combined. A very pretty gold-plated charm for the watch guard. From same makers as No. 201. *Two* subscriptions at $1.50 each will secure it, post-paid. [We will send one post-paid on receipt of $1.25.]



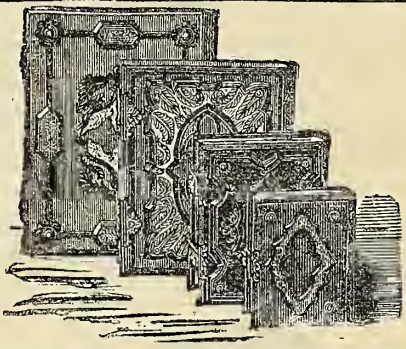
No. 203.—Desk-Pen and Holder.—A ten carat gold pen, with gold-plated holder and ebony handle, in case, a neat and useful article. Same makers as No. 201. For 4 subscriptions at $1.50 each, we will send it post-paid. [Or, we will send one post-paid for $2.25.]

No. 204.—Desk-Pen and Holder.—A fourteen carat gold pen, larger than No. 203, with handsome, gold-plated holder and ebony handle. An elegant desk-pen,—a handsome present for a gentleman. Same makers as No. 201. In ordering *any* pen, state whether a stiff, medium, or limber one is wanted. For 6 subscriptions, at $1.50 each, we will present one, and send it post-paid. [Or we will send one, post-paid, on receipt of $4.00.]

No. 205.—Companion Autograph Album.—It has embossed gilt covers, round corners, and gilt edges. *Fac-simile* Autographs of Whittier, Longfellow, and Bryant, are embossed in gilt on the cover. Collecting and preserving the autographs of friends and others is a charming custom. There is also a great curiosity on the part of almost every one to see the autographs of distinguished people, and the Album which contains such names is highly prized. The COMPANION AUTO-



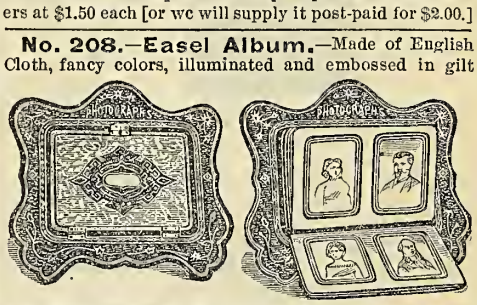
GRAPH ALBUM is one of the most attractive and valuable ever offered to the public. **Besides** the ordinary blank pages for collecting autographs, a new feature of great value is added. *Over thirty* of its 125 pages contain *fac-simile* autographs of distinguished poets, historians, statesmen, journalists, essayists, and novelists. **In addition,** in the hand-writing of the authors, are reproduced stanzas from several famous poems. These have been taken, in most cases, directly from the *original manuscript*, which adds great value to the collection. We will present it, and send it post-paid for 2 subscribers at $1.50 each; [or we will supply it post-paid for $1.00].



No. 206.—Album.—Made of English Morocco, embossed in Gilt and Silver, and contains spaces for 12 Cabinets and 120 Cards. From KOCH, SONS & CO., 156 William Street, New York. We present this for 7 subscribers at $1.50 each, [or we will supply it for $6.00.] Expressage paid by recipient.

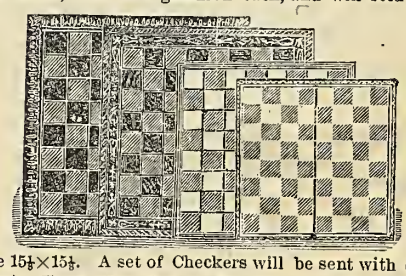
No. 207.—Album.—Made of Leathcrette. Embossed in Gilt and Silver, with spaces for 10 Cabinets and 50 Cards. We will present this post-paid for 3 subscribers at $1.50 each [or we will supply it post-paid for $2.00.]

No. 208.—Easel Album.—Made of English Cloth, fancy colors, illuminated and embossed in gilt

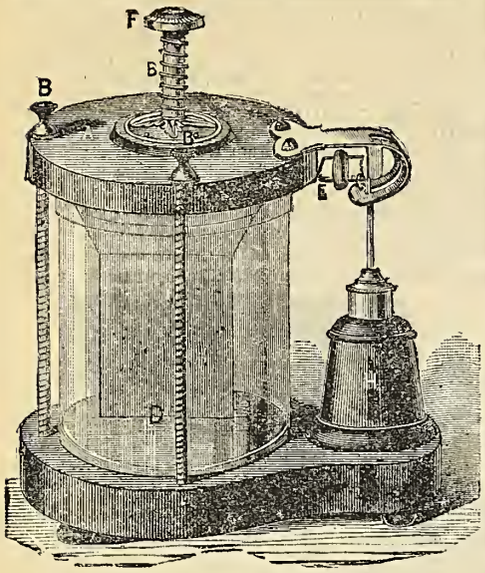


and silver, spaces for 50 Carte de Visites. From same firm as No. 206. *Four* subscriptions at $1.50 each will secure this post-paid [or we will mail it p.-p. for $2.25.]

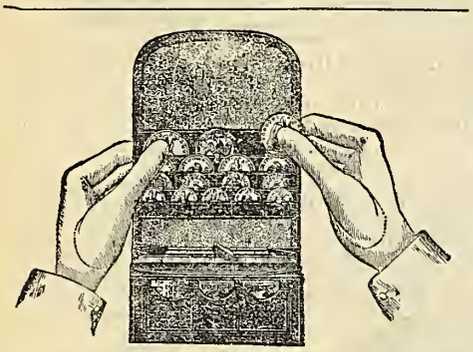
No. 209.—Checker Board.—Made of imitation wood, with Backgammon back, and will fold up;



size 15½×15½. A set of Checkers will be sent with each board. From same firm as No. 206. *One* subscription at $1.50 will secure this sent post-paid [or we will supply it for seventy-five cents, and send it post-paid.]

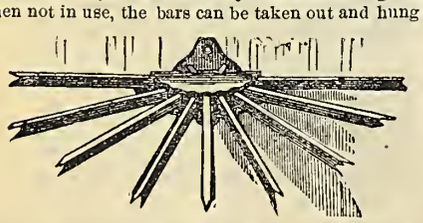


No. 210.—Family Electric Lighter.—A useful and interesting scientific apparatus. A battery, partly filled, is so arranged that on pressing down the knob *F*, the zinc is immersed, a current of electricity is produced flowing through the wire *F*, and the small coiled platinum wire *O*. This heats it intensely so that it ignites the wick of the lamp *H*, almost instantly. This lamp is filled with common kerosene oil, and may be carried around, or used to light other large lamps, gas jets, etc. On removing the finger from *F*, the zinc rises out of the fluid, stopping the waste. It may be repeated some thousands of times, and then only requires a few cents worth of materials from the druggist to renew the liquid, for other thousands of lightings. The apparatus can stand on the mantle shelf or other convenient place, always ready for instant use, instead of matches, saving their cost, their sulphurous fumes, and the danger of fire from having them around. It goes complete with all needed chemicals, safely packed in a box, 5×7×8 inches. From JNO. D. LEVERIDGE, No. 3 Courtland St., N.Y. City. *Five* subscriptions of $1.50 each, will secure this [or we will supply it for $3.50]. Receiver to pay expressage.



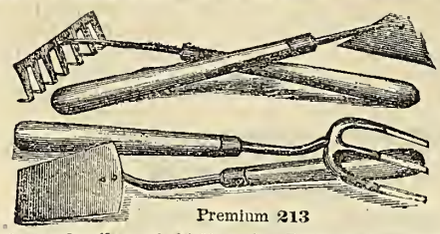
No. 211.—Williamson's Portemonnaies.—These are made for Coins, also for Bills, and are provided with a separate tight flexible pocket, with a clip to facilitate the entry of the coins; be there one or many, they are securely held, and will not drop out, no matter how the book is placed. We offer two kinds—one made of Seal. Price, $2.75. *Four* subscriptions at $1.50 each, will secure this, post-paid. The other is of Imported Cloth. Price, $2.25. *Three* subscriptions at $1.50 each, will secure this, post-paid. [Or we will furnish either of them for the prices stated, post-paid]. These are furnished us by G. C. G. WILLIAMSON, 119 William St., New York.

No. 212.—Umbrella Clothes Horse.—This can he attached to any part of the room, is off the floor, and always out of the way. It is so arranged that when not in use, the bars can be taken out and hung on



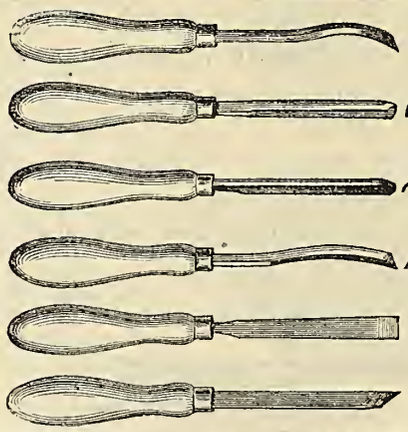
the Iron Fixture, by the hook inserted in each bar. From same firm as No. 50. *Two* subscriptions at $1.50 each secures this post-paid [or we will supply it for $1.25].

No. 213.—Moore's Floral Set.—A complete set of **Ladies' or Children's Garden Tools,** for cultivating flowers, consisting of a *Floral Hoe, Spade, Fork* and *Rake*. Made of the *best steel and iron*, with finely polished *hard-wood* handles, light, durable, and highly finished, each set inclosed in a box. Very convenient in garden or greenhouse. They are *useful*, pleasing toys for the little folks. Presented for



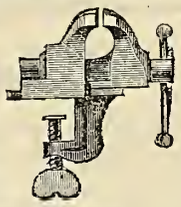
Premium 213

only 2 subscribers, at $1.50 each. Better get more subscribers for more sets, as half a dozen sets or so will come together cheaply as freight. Made by the MOORE MANUFACTURING CO., Kensington, Conn. [We supply one set for $1.00.] Receivers to pay expressage. ☞ If to go by Mail, send us 25 cents for postage & packing.

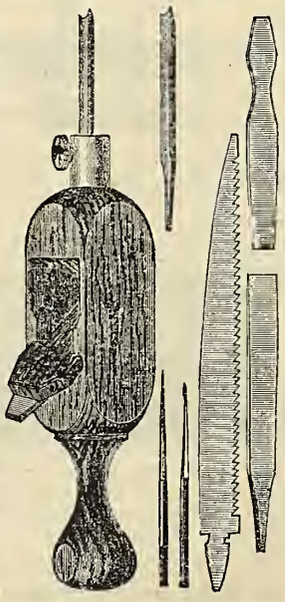


No. 214.—Carving Tools.—Handles of Beech and polished. The tools are made from the best steel, and are sharp and ready for use. From the same firm as No. 17. Two subscriptions at $1.50 each will secure these post-paid [or we will send them post-paid for $1.00.]

No. 215.—Slide Vise.—(Very convenient.)—This vise is of iron, with steel face and has a Clamp by which it can be attached to a table, and can be removed by turning a Thumb Screw. Width of Jaw, 1¼ inches. From MILLER'S FALLS CO., 74 Chambers St., N. Y. Price, $2. For *Three* subscriptions at $1.50 each, we will present this Slide Vise [or we will supply one of them for $2]. Sent by mail, prepaid, in either case.



No. 216.—Companion Tool-Chest, No. 1.—This combination is well adjusted, and it is a convenience for the Family, Store, and Workshop.—It combines: A Rosewood Plane; One Gouge; One six-inch Boxwood Rule; One Medium Chisel; One inch Cutter, used also as a Chisel; One Screw Driver; One Saw; One Awl; One Gimlet. These tools are all made from the best cast steel. The chuck is beautifully Nickel Plated. It will hold a tool as small as a pin head. They are packed in a handsome box. For 2 subscribers at $1.50 each, we send this *free;* [or supply it to any one, and send it, post-paid, for $1.50.]

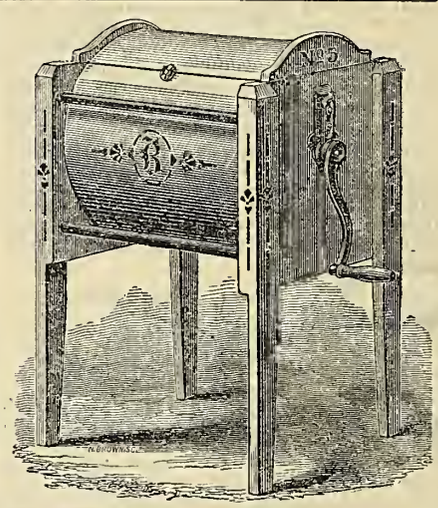


It is a very handy combination for occupying so little room and for so small a price, and may well be obtained by any one who has not the same tools in some other form.

No. 217.—Boy's Tool Chest.—This Chest has 21 assorted tools, in a neat hinged-lid box, made of ash, with walnut moulding. Just the thing to encourage the mechanical genius in boys. Made by E. I. HORSMAN, 80 and 82 William St., New York City. Will be given for 4 subscribers at $1.50 each, [or supplied for the price, $3.00.] The receiver to pay expressage.

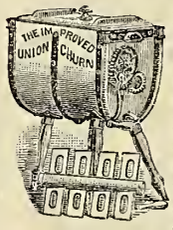
No. 218.—Boy's Tool Chest.—Still larger than No. 217 and from same maker. This contains *thirty-two* tools, and will be a fine present for any boy. It will be given for 8 subscribers at $1.50 each [or we will supply one for $6.00.] Recipient to pay the expressage.

No. 219.—Men's Tool Chest.—This contains an assortment of 40 good Tools, such as are most used; all packed in chestnut box, trimmed with black walnut. From same firm as No. 217. *Twelve* subscriptions at $1.50 each will secure this [or we will supply it for $10.00.] Receiver to pay expressage or freight.



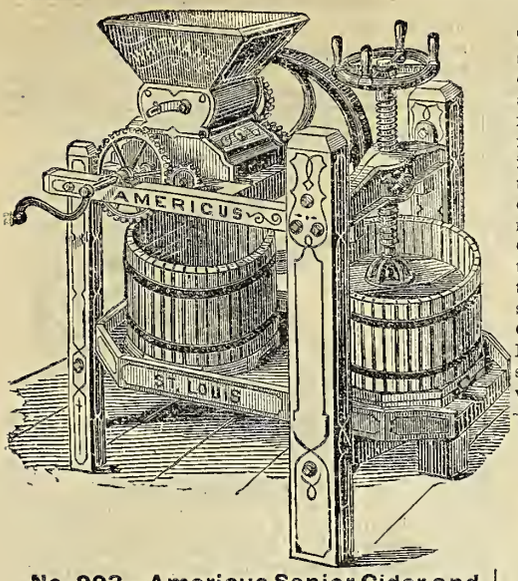
No. 220.—The New Blanchard Churn.—Of the many kinds of apparatus made for converting Cream into Butter, the Blanchard Churn, manufactured by PORTER BLANCHARD'S SONS, Concord, N. H., stands among the best. The makers claim that the action of the dasher is such as to cause agitation of the cream by creating currents, and not by heating or friction of the cream. Four motions are given to the cream by one revolution of the crank. A *reverse* motion of the dasher gives a cam pressure to the butter by which the butter-milk may be all worked out, and the salt worked in, without removing the dasher. Facility of removing the dasher and getting at the butter. Ease of cleaning, the form of construction making the inside without any inaccessible or invisible angles or corners. For *Nine* subscriptions at $1.50 each we will give one of these excellent churns [or, supply one for $8.00], the receiver to pay freight in either case.

No. 221 Improved Union Churn.—



The accompanying cut represents a No. 2 Improved Union Churn, made by the UNION MANUFACTURING CO., of Toledo, O. These Churns have long been in the market, and have been widely used in the West and Northwest, where they are highly commended for their simplicity and durability. We can present one of these Churns to any one who will send us *Eight* subscribers at $1.50 each [or we will supply one for $6.50], receiver in either case to pay freight from factory.

No. 222.—Rectangular Churn.—This unique, yet successful butter maker has won its way to popularity by its merits. The action of the Churn is such that a complete agitation of the cream takes place at every revolution of the churn. After churning, the butter lies so loosely that the buttermilk can be drawn off and cold water put in for washing the butter, which is done by a few revolutions of the churn. These churns are made by Messrs. CORNISH & CURTIS, Fort Atkinson, Wisconsin, and we are able to present one of these useful household articles to any one who will send us *Seven* subscriptions at $1.50 each [or we will furnish one for $6.00]. The receiver to pay freight in either case,



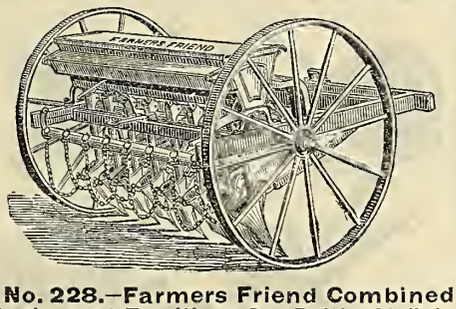
No. 223.—Americus Senior Cider and Wine Mill and Press combined.—Many of our readers and friends raise grapes and apples, but not in sufficient amount to warrant sending a great distance to have fruit ground and pressed. To meet this want, THE WHITMAN AGRICULTURAL CO., of St. Louis, Mo., have invented and manufactured a Grinder and Press combined, secured in one frame, as shown in the engraving. It mashes the fruit perfectly; the rollers are adjustable, so as to grind each coarse or fine; easily cleaned, and every way desirable to the purchaser. With this excellent arrangement of the two machines, it requires but little room, and is always ready for immediate use for the largest or smallest quantity of fruit. On the receipt of 40 subscriptions at $1.50 each, we will present one of these mills [or will forward one on the receipt of $40], the receiver, in either case, to pay the freight. The Manufacturers will send full descriptions of the Mill and Press on application.

No. 224—Family Grind Stone.—This is ten inches in diameter, securely fastened to a wooden stand, as represented in the engraving, well made, and will be found useful in every family. From MILLER'S FALLS CO., No. 74 Chambers St., N. Y. *Four* subscriptions at $1.50 each, will secure this [or we supply it for $2.50.] Receiver to pay expressage.

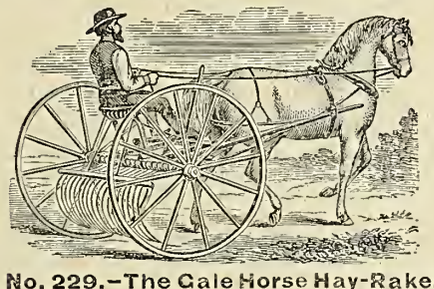
No. 225.—The Whitman Corn and Cob Mill.—These popular mills with steel grinders are warranted by the manufacturers—the WHITMAN AGRICULTURAL CO., of St. Louis, Mo.—to be superior to any other in use for all purposes. We will present one of these mills on receipt of *Fifty* subscribers at $1.50 each [or will furnish one on on receipt of $50]. Receiver to pay freight from factory.

No. 226.—The Monitor Corn Sheller. Of the many implements invented and manufactured to lessen the labor of farm work, there has been no more popular little machine than the hand Corn Sheller made by LIVINGSTON & CO., of Pittsburgh, Pa., and called *Monitor Corn Sheller*. It is admirably adapted for shelling seed corn, where care must be taken in not breaking the outside covering of the kernel. It is easily adjusted to a bench or stool, and can be operated by a child. These Shellers are made of the very best material, fitted up in a workman-like manner, and will last any one a life-time with proper care. They have been awarded medals and diplomas by nearly all the leading Fairs in the Union, and are recommended by those who have used them, and speak from a knowledge of their value. *Eight* subscriptions, at $1.50 each, will secure this useful article. [Or we will supply it on receipt of $6]. The receiver pays express charges.

No. 227.—Zimmerman Fruit-Dryer.—Those who have not given the subject attention will be surprised at the magnitude of the fruit traffic in this country. In the canning business alone over five millions of dollars are invested. One of the easiest and best methods for procuring fruit is by drying, and of the many devices offered to the public none have been better received than Zimmerman's Fruit Dryer, made by the ZIMMERMAN FRUIT DRYER CO., of Cincinnati, Ohio. In order that our readers may secure one of these useful articles at comparatively small cost, we have arranged with the Company to present one of these Dryers to any one sending us 35 subscriptions at $1.50 each [or we will furnish one for $35.00]. The receiver to pay freight.

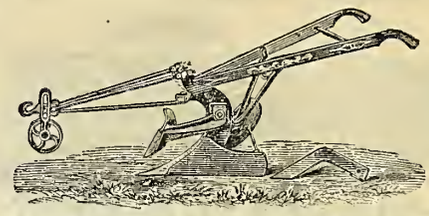


No. 228.—Farmers Friend Combined Grain and Fertilizer Co. Drill.—Of all the improved implements for doing work on the farm, the Grain Drill takes rank with the Mower and Reaper. In order that such readers of the *American Agriculturist* as are not supplied may obtain one, we have arranged with the FARMERS FRIEND M'F'G CO., of Dayton, Ohio, to furnish this excellent Drill to any one who will forward us 70 subscriptions at $1.50 each. [Or we will supply one for $70.00.] Receiver to pay freight. A full descriptive circular sent on addressing the manufacturers, as above.



No. 229.—The Gale Horse Hay-Rake.—This labor-saving implement, doing the work better and faster than half a dozen men with hand-rakes, is wanted on every farm. The annual interest on its cost, is about the same as the cost of one day's work and board of a man. We have arranged with the GALE MANUFACTURING CO., Albion, Michigan, to offer this excellent and cheap $25 Horse-Rake, as a Premium for subscriptions. Send to the Company for fuller descriptions if desired. On the receipt of 25 subscriptions at $1.50 each, we will present one of these Rakes [or will furnish one for $25]. The receiver to pay the freight from the manufactory.

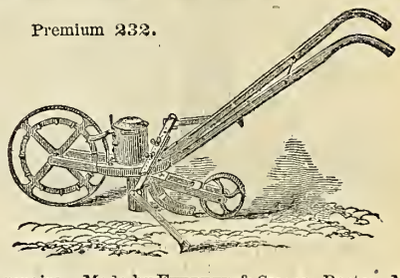
No. 230.—Halladay Windmills.—The accompanying engraving represents the head of one of the Halladay Windmills. They are manufactured by the U. S. WIND ENGINE AND PUMP CO., of Batavia, Illinois, one of the largest and most successful builders in the United States. These mills have been adopted by many leading rail-roads at the West, for pumping water at stations, and have given the best of satisfaction. They are made of all sizes, for both farm and manufacturing uses. 110 subscriptions at $1.50 each, will secure one of these Mills with full directions for building the derrick which can be done by any carpenter. Or to such as may prefer we will ship one of the Champion Windmills made by POWELL & DOUGLAS, Wankegan, Ill., on the receipt of 100 subscriptions, at $1.50 each. The receiver in either case to pay the freight from the Factory.



No. 231.—The Gale Chilled Plow.—This excellent improved plow is worthy of special attention, and we are glad to be able to supply one without cost, to at least one farmer in every neighborhood, who will simply take the trouble to gather a club of 20 subscribers to the *American Agriculturist* at $1.50 a year. [Send your address, on a postal card, to the GALE MANUFACTURING COMPANY, Albion, Michigan, asking for full description, and it will be sent you free]. The engraving above, shows one of these Chilled Plows with *iron beam*, which is claimed to be far superior to the wooden beam. (Those preferring, can have the wood beam at same price). Our Premium Plow includes Wrench, extra Point, and the useful Jointer and Wheel, all without extra charge. Price of the whole, $17.00, for which price we will supply it, or send it complete, as above, for 20 subscriptions. Freight from manufactory to be paid by the recipient.

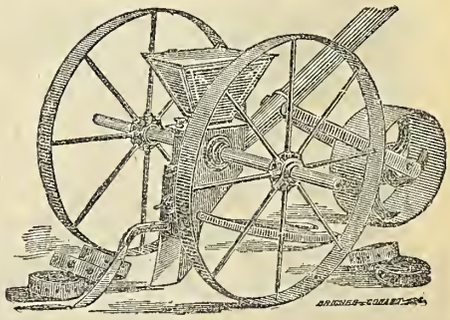
No. 232.—Matthews' Garden Seed Drill.—This is regarded as one of the most valuable implements in use. Medals and testimonials confirming its superiority have been repeatedly bestowed upon it. It is designed to be used either in field or garden. In operation, it opens the furrow, drops the seed accurately at the desired depth, covers it, and lightly rolls it, and at the same time marks the next row, all of which is done with mechanical precision, by simply pushing the drill forward. In this way it sows, with an evenness and rapidity impossible for the most skilful hand to do, all the different varieties of beet, carrot, onion, turnip, parsnip, sage, spinach, sorghum, peas, beans, broom corn, fodder corn, etc. The drill is complete in all its arrangements, and is very durable. There are no cams, gears, springs, or belts, to get out of order, nor are there any parts subject to unusual wear, and, with fair usage, it will last many years, and do a vast amount of service, without requiring

Premium 232.

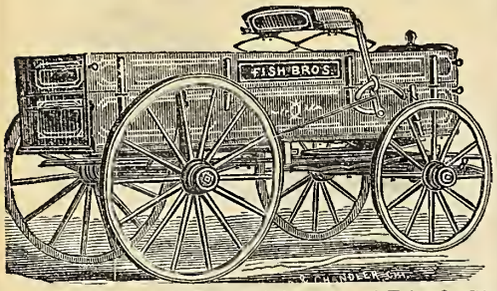


any repairs. Made by EVERETT & SMALL, Boston, Mass. This fine implement given for 15 subscribers, at $1.50 each. [We will supply one for $13.] Receiver to pay carriage.

No. 233.—Sargent's Monitor Seed Drill.—Made entirely of metal; light, strong, and durable. To this machine have been awarded two "First Premiums," and also a diploma at the Massachusetts Mechanics' Charitable Association in 1874. It was awarded the first prize at the Centennial Exposition in 1876, and it has received hundreds of endorsements and

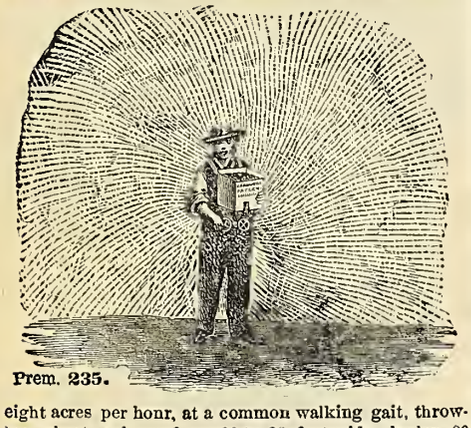


most favorable testimonials from practical agriculturists who have used it. (We have used one with very great satisfaction). The manufacturers claim that this machine is radically different from all others, and that while it does everything that is done by other machines equally well, it effects other results, fully as important which competing machines do not even attempt. It is manufactured by the MERRIMAC MACHINE COMPANY Newburyport, Mass. It will be presented by us for 15 subscriptions, at $1.50 each. [Or we will supply one for $10.] Carriage in either case to be paid by the receiver



No. 234.—A Farm Wagon, of *Extra Quality*, with the new and valuable Holmes Skein, which saves side draft, and allows oiling without removing wheels. Strongly made with the best materials, and every way desirable on any farm. It is a sufficient recommendation to say it is made at the large and most reputable manufactory of FISH, BROS. & Co., at Racine, Wisconsin. (All are invited to send postals to them for full description of this wagon and its special features.) To meet the wants of our readers needing such a wagon, but who have more time than ready cash, we have arranged to present one of these wagons, complete, including Top-Box, Spring Seat, Whiffle-trees, Neck-Yoke and Wrench, to any one sending us 80 subscribers at the regular rate of $1.50 a year. [We will supply one complete as above for the price, $80.00.] Receiver to pay the freight from the manufactory. Here is a capital chance for many a farmer (or his sons) to get an **A 1,** full size Wagon, without expense, and with only a little trouble by gathering 80 subscriptions during the Autumn or Winter, in his own or adjoining neighborhoods.

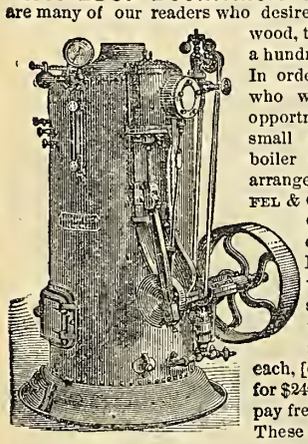
No. 235.—Cahoon's Broadcast Seed-Sower.—This Hand Seed-Sower sows from four to



Prem. 235.

eight acres per hour, at a common walking gait, throwing wheat and rye from 30 to 36 feet wide; barley, 30 feet; hemp, 28 feet; oats, 23 feet; clover, Millet and Hungarian seed, 22 feet; and Timothy, 18 feet. Price, $6. Presented to any sender of 8 subscribers for *Agriculturist*, at $1.50 each. It is manufactured by the GOODELL Co., at Antrim, N. H.—[We will supply one on receipt of the price, $6.] Receiver to pay express charges.

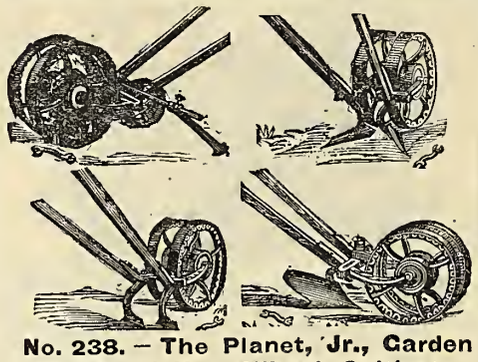
No. 236.—Bookwalter Engine.—There are many of our readers who desire power for sawing wood, thrashing grain, and a hundred other purposes. In order to enable those who want such power an opportunity to obtain a small steam engine and boiler complete, we have arranged with JAMES LEFFEL & Co., of Springfield, Ohio, to furnish one or more of these Bookwalter Engines, which we will present to any one who will send us 240 subscriptions at $1.50 each, [or we will supply one for $240]. The receiver to pay freight in either case. These engines are pronounced by practical engineers and mechanics to be the most compact, substantial and economical engines ever offered to the public. Its superior construction, and ease of management, at once commends it to those who understand the use of such machinery.—Every boiler and engine thoroughly tested before being sold. The above is the price for engine boiler, governor, pump, etc. complete.



No. 237.—Pocket Tool Holder.—(*See Engraving.*)—Every boy (or man) will be glad to get hold of this Premium. We kept a similar, but less perfect set in use many years, and found it *very convenient* for a thousand little jobs. In a maple handle, which is hollow, with a lignum-vitæ head, are packed *twenty* small *cast-steel* tools, any one of which may be quickly adjusted to the handle. It will also hold for using, anything from an 8-inch mill-file to a cambric needle. Only 2 subscribers, at $1.50 each, sent to us will secure you a *free* set, post-paid. These are made for us by

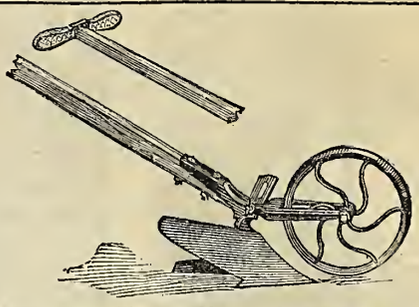
Premium 237

the MILLER'S FALLS MANUFACTURING Co., 74 Chambers St., New York.—[We will send one, post-paid, for $1.00.]



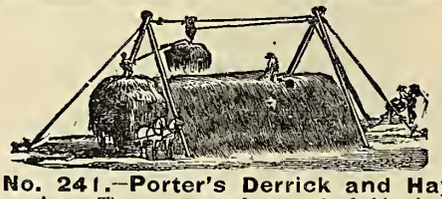
No. 238.—The Planet, Jr., Garden Drill, Wheel Hoe, Wheel Cultivator, and Wheel Plow, Combined.—This combination of garden tools is one of the most valuable ever offered to our readers. The four engravings show a portion of the combinations. As a Drill, it is capable of sowing the whole list of garden seeds, being furnished with an adjustable opening plow, patent dropping and covering devices, and a marker and roller. As a Wheel Hoe, it hoes close and thoroughly the smallest plants. As a Wheel Cultivator, one can do as much with it as six with hand hoes. In addition to these useful combinations, the tool is provided with an elegant polished steel plow, an ever useful assistant in the garden from spring until fall. The makers claim that this combination is the most valuable ever offered to the gardener. The price is but little more than that of an ordinary seed-drill, yet the additional combinations are many times more useful than the drill alone. Descriptive catalogues will be sent on application by postal card to the manufacturers, S. L. ALLEN & Co., 229 Market St., Philadelphia, Pa. We present this premium for 16 subscriptions at $1.50 each. [Or we will supply the apparatus for $14.] Freight in either case to be paid by receiver.

No. 239.—The Planet, Jr., Double Wheel Hoe, Wheel Plow and Cultivator.—Garden and drilled crops must be hoed constantly, and this tool, in its present improved form, does its work so much more closely and perfectly than the most skilled hand labor, that no market gardener, root grower, onion grower, nurseryman, or plant grower can afford to be without one. The great ease and speed with which the work of hoeing drilled crops can be accomplished with this tool, makes it possible to tend a large crop at the proper time. All are tempered Steel, handsomely polished. The advantages of a good Double Wheel Hoe are numerous; working both sides of the same row at once, all bends in the row are readily followed, and the work done far closer and better, and also easier, from the attention being directed to but one row at a time. The tool weighs about 20 pounds, and being used with a stroke and punching motion, is very effective in all kinds of soil. From same makers as No. 238. *Eleven* subscriptions at $1.50 each will secure this. [Or we will supply it on receipt of the price, $9.] Receiver in either case to pay for transportation from the manufactory.



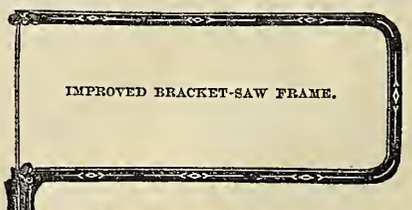
No. 239.—Firefly Hand Hoe and Garden Plow.—For garden use. This hand hoe, adjustable for depth, and steadied by the wheel, is a most admirable tool for the vegetable garden, doing the work every way in an excellent manner. With it almost the whole work of a garden can be accomplished with ease, thoroughness, and rapidity, the slight weeding or hoeing needed directly *in* the row excepted. 5 subscriptions, at $1.50 each, will secure this. [Or we will send one on receipt of $3.50.] Receiver in either case to pay carriage by express or freight. These Hand Hoes are made by S. L. ALLEN & Co., Philadelphia, Pa.

No. 240.—Victor Five-Hoed Seed Drill.—There are many farmers who do not feel able to invest a large sum of money in farm implements. Many such persons have small farms that require but little labor to cultivate them. To meet a long felt want by this class of most worthy citizens, Mr. EWALD OVER, of Indianapolis, Ind., has invented and perfected a five-hoed Seed Drill, to be operated by one horse. These drills are provided with a graduated forced feed and do their work as well as the best ten-hoed drill in the market, and are especially adapted for sowing small grain of all kinds. They are substantially made, light in weight, and cheap in price. For 25 subscribers we will *present* one of these five-hoed drills [or will send one on receipt of the price, $25,] the receiver to pay freight in each case.



No. 241.—Porter's Derrick and Hay Carrier.—There are many farmers who find it a long and laborious task to stack their hay and straw in the field. In order to enable any of our readers to expedite their labor, we have arranged to present to any one who will forward us *Forty* subscribers at $1.50 each, one of these Wire Cable Derricks, made by J. E. PORTER, Ottawa, Ill. [or will forward one on receipt of the retail price,] $40, the receiver in either case to pay express charges. The Derrick is sent complete, except the poles, which can be obtained by any one.

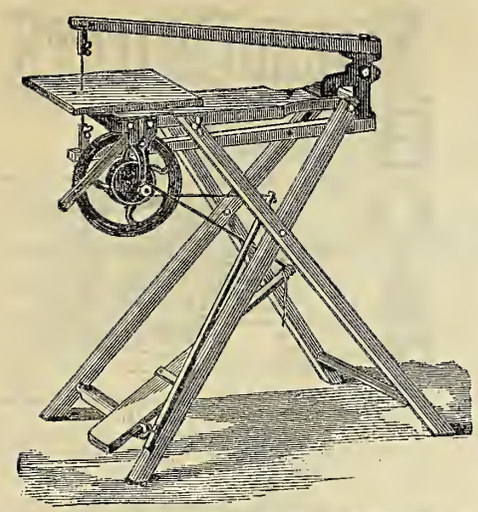
No. 242.—Improved Bracket-Saw Outfit.—This fine "*Improved Outfit*" consists of: 1 Beautiful Box; 1 *Steel* Saw Frame, Japanned and Finely Ornamented; 50 Bracket and Ornamental Designs; ½ Doz. Steel Saw Blades; 1 Brad Awl; 1 Piece Sand Paper; 85 miniature Designs, of full size, with a price list; 1 Manual of Instructions, 12 pages, Illustrated, giving description of all tools and woods used in Bracket



IMPROVED BRACKET-SAW FRAME.

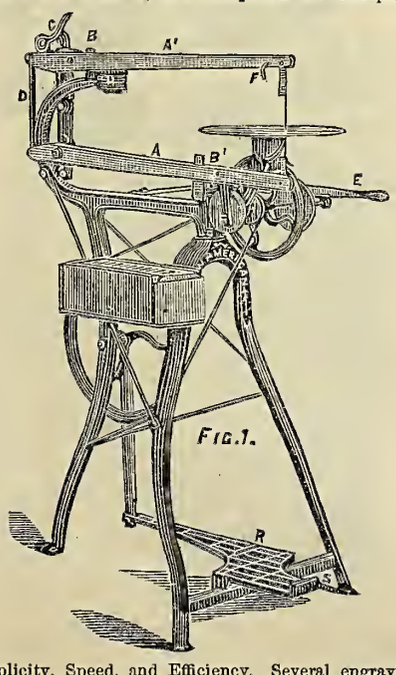
Sawing; Five illustrated lessons for beginners; Instructions how to apply the Design, smooth the work, put it together, and finish it in oil, shellac, varnish, and polish. One page is given to illustrated lessons in Marquetry or Inlaying work. For *Two* subscriptions at $1.50 each, we will mail this *free*; [or we will supply it, *post-paid*, for $1.18.]

Subscriptions for **English** or **German** Editions are at the same rates, and count alike for Premiums, together or separately.

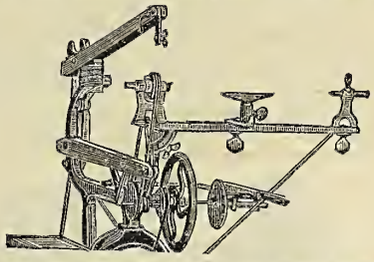


No. 243.—New Folding Fret Saw.—Every home, however humble or magnificent, is more beautiful if adorned with brackets and other work produced by home hands. Hundreds of thousands of such homes now exist, where only the slow and tedious hand frame fret saws have been available. More recently the foot-pedal and multiplying wheels have come into use, and the increasing demand has tended to cheapness and improvement. We are now happy to announce another *large advance in Perfection, Cheapness, and Portability, by which are secured stronger, better working machines; a material reduction in price, and a great saving in cost of carriage or delivery, as well as in storage room when not in use, with sundry other improvements and advantages.—All the above are secured in this new saw.* By a simple arrangement the table is lowered to a convenient working hight for a boy of 5 or 6, or raised high enough for the tallest man, and at every hight it stands *firmly*, and when not in use, it can be folded up and put away. It has a *tilting* table, and will execute fine scroll-work or inlaid work. Though as strong and durable as any one could desire, the weight is ONLY 15 LBS. The Editors and Publishers of the *American Agriculturist* were so pleased with this new machine that they at once secured the control of it for the benefit of their readers. *Four* subscriptions at $1.50 each, will secure this [or we will supply it for $2.25]. Receiver to pay expressage.

No. 244.—Combination Fret Saw, Lathe, etc.—*Beach's New Improved American Combination Fret Saw*, Handsome in Design, and claimed to be the Lightest Running and Best Made Tool in the World for the Price; and unequaled for Cheapness,



Simplicity, Speed, and Efficiency. Several engravings and much space would be required to explain all its parts, and its working, ingenious improvements, etc. Full descriptive circulars sent when desired. Is built almost wholly of iron and steel; stands firmly without fastening down. Will cut Horn, Ivory, Pearl, Shell, Brass, and all kinds of Wood up to 1¼ inch thick. Saw runs straight up and down. Has a tilting table to cut at angles. Has Air-pump which drives all sawdust from

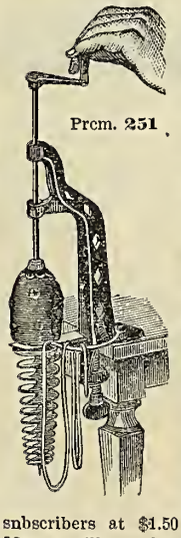


the work. Has 20 inches swing, for largest Brackets. Has **Drill Attachment** always ready for use. Also **Turning Lathe** for work **12** inches long, and **4** inches diameter, with speed of 1,500 revolutions per minute. Also set of **Steel** Turning Chisels, made from *Jessup's Best Improved* English Steel. Price complete, including *Lathe* and *Drilling Attachment*, one Morse Flint Drill, Wrench, Oil Can, Screw-driver, six Improved Fret Saws, and one large Saw $^{3}/_{16}$-inch wide for cutting up timber. Also one set of Turning Chisels, boxed tight, and delivered on car at Factory all for $8—a reduction of $3 from last year's price.—We will present the above for *Twelve* subscriptions at $1.50 each [or supply it for $8.00]. The freight to be paid by Receiver.

No. 245.—Hand-Drill.—A very useful little tool. The Drill Stock, and Six Drill Points, are packed in a box. From MILLER'S FALLS Co., 74 Chambers St., N. Y. For *One* subscriber at $1.50, we will mail the Drill, post-paid, [or mail it to any one for 60 cents.]

No. 246.—Designs for Scroll Saw.—This Premium consists of one dozen Ornamental Designs for Scroll or Fret Saw. *One* subscription, at $1.50, will secure these [or we supply them for 75c., post-paid].

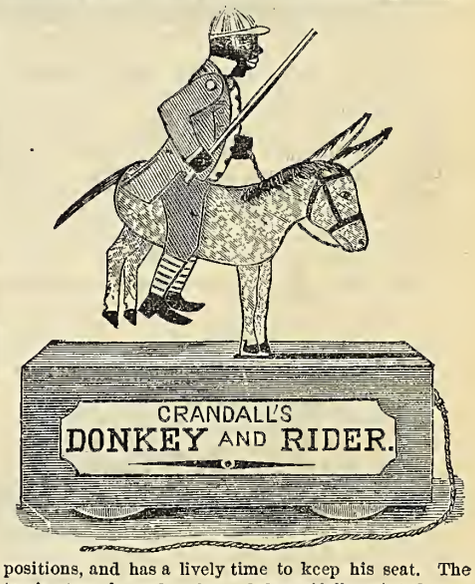
No. 247.—Turn-table Apple Parer, Improved.—No. 248. Climax Apple Corer and Slicer.—No. 249. Family Cherry Stoner.—No. 250. Bay State Apple Paring and Slicing Machine.—No. 251. "Saratoga" Potato Peeler and Slicer.—(*See Engraving.*)—All the above machines are most useful in every household where apples, cherries, and potatoes are to be cared for. Manufactured by the GOODELL Co., Antrim, N. H. We have never seen the work for which these machines were contrived, more rapidly or better done, than *they* will do it. The Apples are pared, cored, and sliced with the greatest facility, and the Cherries are readily relieved of their stones, leaving the fruit in good shape. The "Bay State Parer and Slicer" has a new attachment to the Knife Head which cuts the Apple into slices, and places them at one side, in a dish on the table. The "Saratoga" slices and peels the potato at one operation, and is a very ingenious and useful contrivance. ☞Only *two* subscribers, at $1.50 each, are required to get any one of the above, except No. 250, which requires *three* subscribers. For *seven* subscribers at $1.50 each, we present the *whole* (5). [Or we will supply any one of them for $1.00, except No. 250, which is $1.50. Receiver to pay expressage.



Prem. 251.

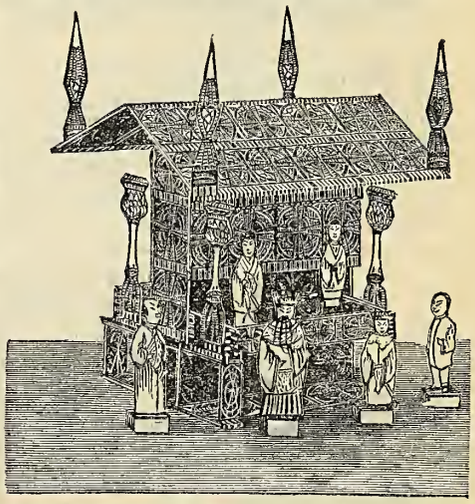
No. 252.—Crandall's Two Jolly Blacks.—Fun and frolic. This is a Mechanical Toy without clock-work. It runs on four wheels, and, when set in motion, the figures, which are brightly colored, with jointed limbs, perform what may well be called a jolly dance. The whole toy is very strongly made. When not in use the figures can be packed in the box on which they dance. One *new* subscription at $1.50 secures this, post-paid. [Or we will send it, post-paid, on receipt of 70 cents.]

No. 253.—Crandall's Donkey and Rider.—This is a most comical and pleasing Mechanical Toy, being a good specimen of Barnum's Tricky Mule. When drawn around, the Mule seems to be trying to throw its Dusky Rider, who assumes various grotesque



positions, and has a lively time to keep his seat. The toy is strongly made, of wood, beautifully painted; can be taken apart and packed in the box on which it performs. One *new* subscription, at $1.50, secures this, post-paid. [Or we will mail one, post paid, for 70 cents.]

No. 254.—Crandall's Chinese Blocks.—In this most attractive combination, Mr. Crandall gives us the original Building Blocks, with an entire Chinese Family, the various blocks and figures be-



ing brilliantly colored. With a single Box, which contains a Set, one can build Chinese Houses, Palaces, Pagodas, Gardens, etc., etc. Thousands of structures of the Chinese style can be made with a Box of these fascinating blocks and figures. *Two* subscriptions at $1.50 each, will secure this *free*, carriage pre-paid to any part of the United States. [Or we will send a box anywhere in the United States, prepaid, on receipt of $1.25.]

No. 255.—Crandall's Lively Horseman.—This Mechanical Toy has no clock-work, and performs without winding up. It has all the features of a Circus Rider going through the wonderful feats of that profession. The Horse and Rider are of wood, finely painted. Can be taken apart and packed in the box on which it performs. A child can draw it around without any danger of breaking it. One *new* subscription, at $1.50, secures this, post-paid. [Send one, post-paid, for 70 cents.]

No. 256.—Crandall's District School.—This very amusing group of teacher and scholars in the "district school" will delight every Child, and Man and Woman too. The grave "Master," seated by the desk, with his "whisking stick"; the boys and

girls with their *books*; the "Little Lamb" that has followed Mary to school; "Dunce" and his cap, and the altogether comical appearance of the whole company, make this one of the most attractive toys of Crandall's invention.—*Two* subscribers at $1.50 each, will secure a box, postage prepaid. [We send one, post-paid, for $1.20.]

No. 257.—Citadelle—A Pleasing Parlor Game.—Size of Board, 10×38 inches, with Balls, Cues, etc., Each player has five turns in sending the ball against the Citadel. The most accurate marksman will score the highest number of points and win the game. WARNER & Co., Northampton, Mass., are the makers. Only 2 subscriptions at $1.50 each, will secure this Game; [or we will supply one on receipt of $1.00.] Expressage to be paid in either case by the receiver.

No. 258.—Tammany Bank.—This is a good substantial Bank. The man holds his hand to receive the coin, and when placed in it, the weight causes him to drop the coin into his pocket, which touches a spring, and he makes a bow. From same firm as No. 259. *Two* subscriptions at $1.50 each, secures this [or sold for $1.00]. Recipient to pay express charges. (The Tammany Bank weighs 32 ounces.)

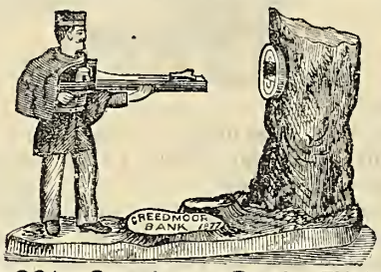
☞ If to go by mail, send us 32 cents for postage & packing.

No. 259.—Parcheesi.—This game is designed so plainly and attractively that it is quickly comprehended by children, and also excites interest in the oldest players. It is bound in durable, handsome paper, with 8 dice, 16 brass-bound counters, and directions for playing. From E. G. SELCHOW & Co. We present it for 2 subscribers at $1.50 each [or supply it for $1.50.]

☞ If to go by Mail, send us 15c. for postage and packing.

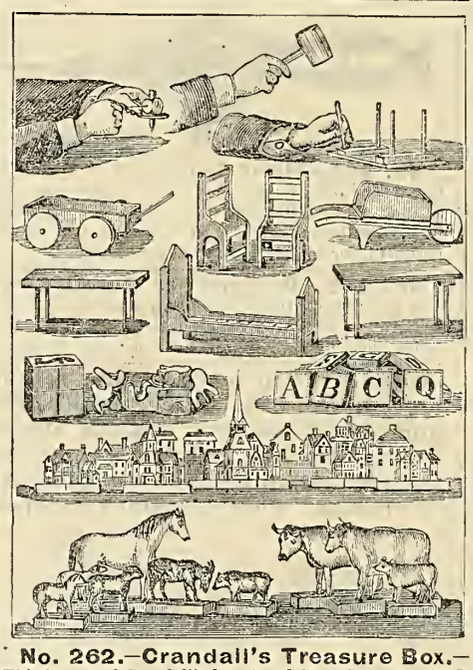
No. 260.—"Co-Bang."—The new East India parlor game. It is pronounced by many, the best parlor game of the day. Directions for playing it, accompany each one. From same firm as No. 259. Presented for 2 subscribers at $1.50 each [or we will supply it for $1.00].

☞ If to go by Mail, send us 15 cents for postage & packing.



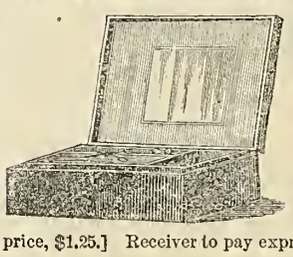
No. 261.—Creedmoor Bank.—This is quite an ingenious affair. The man's head moves forward, you draw back the spring in the gun, then place a coin in front of the spring, touch the right foot, and the gun shoots the coin into the stump and rings a bell. From same firm as No. 259. Two subscriptions at $1.50 will secure this [or we will supply it for $1.25), the recipient to pay express charges in either case. (Weighs 50 ounces.)

☞ If to go by mail, send us 50 cents for postage & packing.



No. 262.—Crandall's Treasure Box.—This is one of Crandall's latest and best inventions. It is not a single toy, but a dozen in one, comprising a Wagon, Top, Bedstead, 2 Chairs, Wheelbarrow, Mallet, Bench, Table, Puzzle, Set of A B C Blocks, a group of nine Domestic Animals, and a pretty, Suburban Village. A most delightful combination for the little folks. Price $1.00. *Two* subscriptions at $1.50 each, will secure this. Receiver to pay expressage. Too large to go by mail.

No. 263.—Walnut Work Box.—A pleasing gift for a young Miss. It is a 12-inch solid walnut Box, cushion, etc., inside velvet finish. From same manufacturer as No. 277. *Two* subscriptions at $1.50 each will secure it, [or we will supply it for the price, $1.25.] Receiver to pay expressage in either case.



No. 264.—Sliced Objects; Sliced Birds; Sliced Animals.—These pleasing, dissected puzzles, or "sliced" objects, etc., are designed to attract and interest the little folks, as they invariably do, and at the same time help them in learning to spell. The engraving of a "Boat," shows how the objects, animals, etc., are divided into sections. They are very popular with children, as they are got up in attractive style. From E. G. SELCHOW & Co. The "*Objects*," or "the *Birds*," or the "*Animals*," will be presented for only one new subscriber at $1.50 [or for 50c.]. Name the one desired.

☞ If to go by Mail, send us 15 cents for postage & packing.

No. 265.—Crandall's Sectional A B C Blocks.—A beautiful thing for little scholars. They learn while they play. All the letters of the Alphabet can be made with this set of Sectional Blocks. The ingenuity of the young operator is developed, and, while placing together the various sections of these attractive blocks, the little boy or girl unconsciously learns the Alphabet. Many pleasing structures can also be made by joining the pieces in various ways. The blocks are very brilliantly colored with fine paint, and are made strong and durable. A handsome illustrated Chart goes with each box, and adds brilliancy to the toy. *Two* subscriptions at $1.50 each, will secure this, post-paid. [Or we will supply a box, post-paid, on receipt of $1.00.]

No. 266.—Girl's Polished Metal Tea Set.—This consists of Tea-pot, Sugar Bowl, Milk Pitcher, six Cups and six Saucers, six Teaspoons and Sugar Tongs, and is very strong and durable. From same firm as No. 58. Two *new* subscriptions, at $1.50 each, will secure this. [Or we will supply the set for $1.50.]

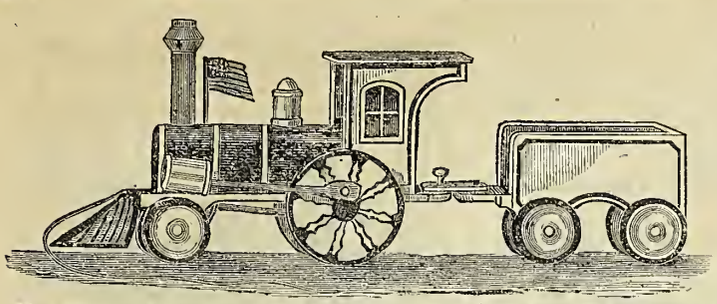
☞ If to go by mail, send us 20 cents for postage & packing.

No. 267.—Girl's China Tea-Set.—This consists of six Cups and six Saucers, six Plates, Tea-Pot, Milk Pitcher, and Sugar Bowl, handsomely decorated in gilt and colors, packed in a box. From same firm as No. 58. *Four* subscriptions at $1.50 each, will secure this as a premium, [or we will supply the set for the price, $2.50], the expressage to be paid by the recipient.

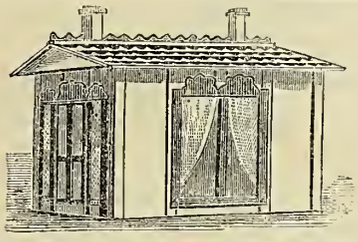
No. 268.—Girl's Wash Set.—This is composed of six pieces, viz.: Washboard, Wringer, Pail, Clothes-horse, Scrub-brush, and brass-bound Tub 10 inches in diameter. From same manufacturer as No. 277. One *new* subscriber at $1.50 will secure it. [Or we will supply it for the price, 75 cts.] Receiver to pay expressage.

☞ If to go by Mail, send us 20 cents for postage & packing.

No. 269.—Doll's Kitchen Set.—This contains a variety of articles, such as Pans, Kettles, Coffee-Mill, etc., etc. Made of tin, and packed in a box. From same firm as No. 58. *Two* subscriptions at $1.50 each, secures this, post-paid [or we supply it, post-paid, for $1.]

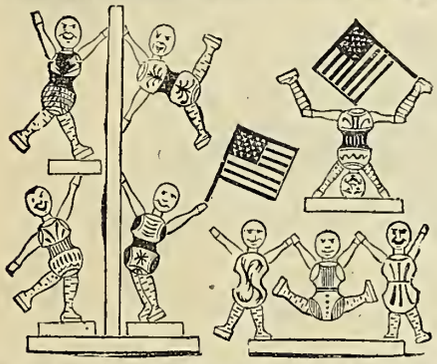


No. 270.—Whistling Locomotive.—This new Toy *is* a marvel as to its simplicity. At every revolution of the "driving wheels" there is produced a good strong whistle, which adds greatly to the pleasure of the boy or girl who runs it. It is 27 inches in length, and 10½ inches in hight, and showily painted. *Two* subscriptions at $1.50 each, will secure this [or we will supply it for $1.00]. Receiver to pay expressage.



No. 271.—Doll House.—This House is 21 inches in length, 13⅜ inches wide, 19 inches deep; it is made of Wood, with slanting roof, painted and ornamented inside and out; the windows are glass, with curtains to each, and the floor is fancily covered. A suit of Furniture will accompany each house. It is so made that it can be taken apart and packed in a box. *Six* subscriptions at $1.50 each, will secure this. [Or we will supply it for $4.00.] Receiver to pay expressage.

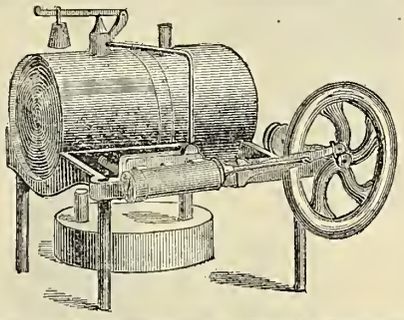
No. 272.—Crandall's New Acrobats.—Most brilliant in costume, and full of fun and frolic. The "New" Acrobats are a great improvement upon the old style, which created such an excitement among the little folks. These are among the most fascinating and ingenious toys ever invented. The hundreds of figures which can be made with the pieces in a single box is limited only by the ingenuity of the operator. For one *new* subscription, at $1.50, we will present a box and send it postpaid. [Or we will send a box, post-paid, for 65 cents.]



No. 273.—Toy Furniture.—This is made of White Holly, or Black Walnut, and consists of six pieces, viz., 1 Sofa, 1 Rocker, 1 Arm Chair, 1 Centre Table, and 2 Chairs, with Cushioned Bottoms. *One* subscription at $1.50, will secure this set [or we will supply it for 75c.] Send 16 cents for postage, if to go by mail.

No. 274.—Toy Furniture.—This is made of White Holly, or Black Walnut, and contains seven pieces, viz., 1 Sofa, 1 Rocker, 1 Arm Chair, 1 Centre Table, and 3 Chairs, with Cushioned Bottoms. *Two* subscriptions at $1.50 each, will secure this [or we will supply it for $1.00]. Send 16 cents for postage, if to go by mail.

No. 275.—Toy Steam Engine Eclipse.—Large Boiler, running parts best proportioned to get the most work from it, improved Lamp, two speeds to belt pulley. Boiler of Brass. Hight, 4½ inches, and is suitable for running model (or toy) machinery. All packed in a box, with Lamp, Funnel, etc. From Peck & Snyder, 124 Nassau St., N. Y. *Three* subscriptions at $1.50 each, will secure this [or $1.00 cash, post-paid.]

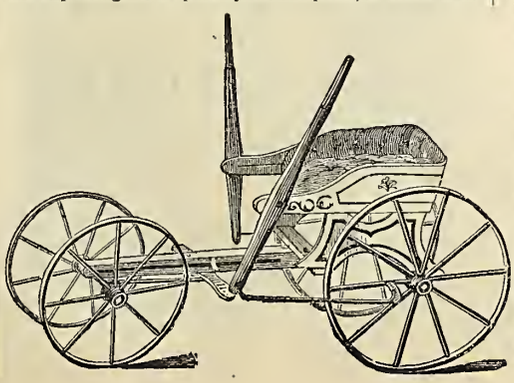


No. 276.—Horizontal Boy's Engine.—This has Brass Boiler, regular Safety Valve, Brass Pipe connecting Boiler with Steam Chest, one-inch stroke, cross-bead running on steel ways. Length, 6 inches; hight, 4½ inches. All packed in a box, with Lamp, Funnel, etc. From same firm as No. 275. *Four* subscriptions at $1.50 each, will secure this, post-paid. [Or we mail it, post-paid, for $2.50.]

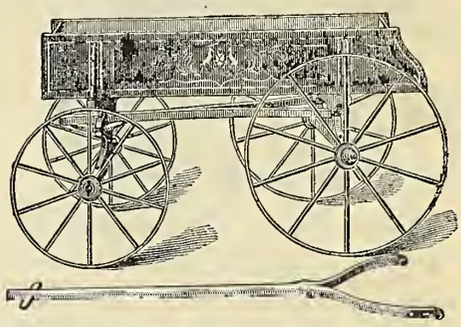
No. 277.—Portable Writing Desk.—Always handy, especially for the young folks. Closed, it is a 12-inch square black walnut desk. From C. W. F. Dare, 47 Cortlandt St., New York City. *Two* subscribers at $1.50 each will secure this. [We will supply one for $1.25]. Receiver to pay expressage.

Premium 277—Opened.

No. 278.—Patent Four-Wheeled Propeller.—This is strongly made, handsomely Painted and Varnished, Seat Upholstered in Enamel Cloth. Can be used by girls or boys from 5 to 16 years of age. From same firm as No. 277. Price, $7.50. *Eight* subscriptions at $1.50 each, will secure this [or, we will supply it for $7.50], the expressage to be paid by the recipient, in either case.



No. 279.—Parlor Floor Croquet.—Very neatly made and finished. Size adapted for either adults or children. The Wickets are so arranged that they will not injure the carpets, consisting of 4 Balls, 4 Mallets, 10 Arches, pointed so as to pierce the carpet, and 2 Stakes; all put up in a neat white box. From E. G. Selchow & Co., 41 John St., New York. We will present this for *Two* subscribers at $1.50 each [or we will supply it for $1.50.] Expressage paid by recipient.



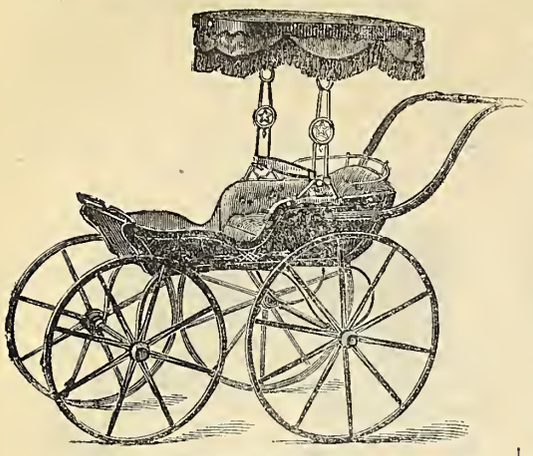
No. 280.—"Our Boys'" Wagon.—For the use of Boys from 6 to 15 years of age. The bed is 2 ft. 8 in. long, 1 foot 3 in. wide, and 5 in. deep. The wheels are all iron, the spindles also of iron. It is finely painted, a first-rate and handsome wagon, and will carry a weight of 400 to 500 lbs. on a level road. Made by the Silver & Deming M'f'g Co., Salem, Ohio. Presented for only 10 subscriptions, at $1.50 each, [or we supply one for $8.] The freight from the factory paid by receiver.

No. 281.—Boy's Wagon.—Just the thing for the active little "drivers" at home. This Wagon has iron axle, and heavy round tire wheels, painted and ornamented with bright colors, has hub caps and seat, with 28-inch body. From C. W. F. Dare, 47 Cortlandt St., New York. A father, mother, or older brother or sister ought to easily collect the 7 subscribers which will get this.—[Or we will supply one for $5.00.] Receiver to pay expressage.

Premium 281

No. 282.—Doll Perambulator.—This has 9 and 12-inch wheels, painted, varnished, and ornamented, large sized body, enamelled cloth Seat, with Canopy Top. From same firm as No. 281. *Two* subscriptions sent, at $1.50 each, will secure this [or we will supply it for $1.50.] The expressage to be paid by the recipient.

No. 283.—Tally-Ho Perambulator.—Same as No. 284, but of superior quality. Upholstered with Enamel Cloth, has carpet on the bottom, full length Seat-rail, Dash-rail, Handle-tips, and the Canopy Top will turn forward or backwards. The body is hung between two full "C" Springs, pivoted to the side, which produces a soft and easy motion. The Axles are of Iron; Oval Tires on wheels. Handsomely Painted, Varnished and Ornamented. It is a most desirable article. From same firm as No. 284. Presented for 15 subscriptions at $1.50 each, [or we will supply it for the low price of $12.00.] The expressage to be paid by recipient, in either case.

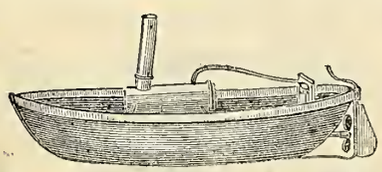


No. 284.—Tally-Ho Perambulator.—The newest and by far the *best* for carrying a child out The Top can be readily set upright, or backward or forward *at any angle*, to shut off the sun, and will stay firmly when set. Closely packed in the top, is a set of curtains, of which one or more can be quickly let down, as wanted, at either, or both sides, and at the back. No. 284, has patent Valise Canopy Top. The Seat is upholstered with Enamel Cloth, the Axles are Iron, with Steel Springs, front and back, and Oval-tired Wheels. Handle-tips. Hub Caps. Painted. Varnished, and Ornamented. From C. W. F DARE, 47 Cortlandt St., New York. *Twelve* subscriptions at $1.50 each, will secure this [or we will supply it for $9.00]. The expressage to be paid by the recipient, in either case.

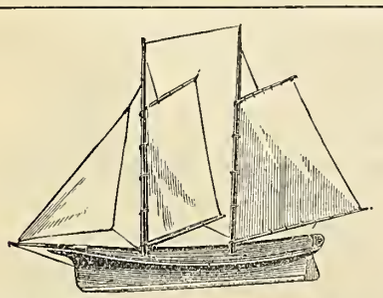
No. 285.—Boy's Velocipede.—(3 wheels), strongly made, has two 16 and one 18-inch oval-tired Wheels, Handle-tips, Leather Quilt Saddle, handsomely Painted and Varnished, suitable for boys from 4 to 6 years of age. From same firm as No. 284. *Six* subscriptions at $1.50 each, will secure this [or, we will supply it for $5.00], expressage to be paid by the recipient.

No. 286.—Boy's Velocipede.—(3 wheels), same as No. 285, Larger Size; two 24 and one 28-inch oval-tired Wheels. Suitable for boys from 8 to 12 years of age. From same firm as No. 284. Price, $6.50. *Seven* subscriptions at $1.50 each, will secure this [or, we will supply it for $6.50]. Expressage to be paid by the recipient.

No. 287.—Bicycle.—This has a thirty-six-inch Wheel, shaved Spoke Wheels. Painted and Varnished, with bright Metal Castings, Saddle of the same metal, suitable for a boy from 12 to 18 years of age. From same firm as No. 284 Price, $12.00. *Thirteen* subscriptions at $1.50 each will secure this [or, we will supply it for $12.00]. A Capital Present. The Expressage to be paid by the recipient, in either case.

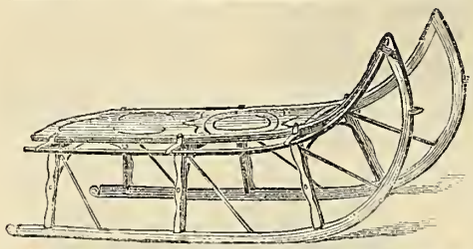


No. 288.—Steam Propeller.—This is a genuine little Steam-Boat, with Boiler and Engine. The hull, boiler, lamp, smoke-stack, steam-pipe, propeller, rudder, etc., are made of brass, and it can be operated in a tub, pond, or small lake. It is 9 inches long. From same firm as No. 279. Price, $2.00. *Three* subscriptions at $1.50 each will secure this [or we will supply it for $2.00]. ☞ If to go by mail, send us 12 cents for postage & packing.



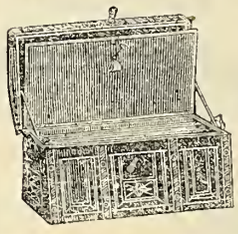
No. 289.—Boy's Yacht.—This Yacht is 16 inches long, Schooner rigged, fine model, and nicely painted and varnished From same firm as No. 58. *Three* subscriptions at $1.50 each, will secure this [or we will supply it for the price, $2.00].

No. 290.—Garden Wheelbarrow.—This is well and strongly made, Painted, Varnished, and Ornamented. Length of Body, 4 feet; width, 16 inches; size of Wheel, 13 inches, and the Sides can be taken out, and can be used for gardening purposes. From same firm as No. 284. *Three* subscriptions at $1.50 each, will secure this [or we will supply it for $2.00]. The expressage to be paid by the recipient, in either case.



No. 291.—Sleigh.—This is made of Oak, ornamented and varnished, bright tin braced, arched Knees, and polished Runners. Length, 33 inches; width, 12 inches. Many a boy can secure this. From same firm as No. 284. *Three* subscriptions, at $1.50 each, will secure this premium, [or we will supply it for the price, $2]. Expressage to be paid by recipient.

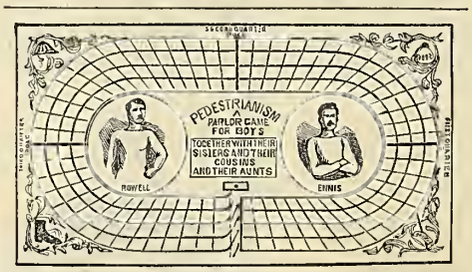
No. 292.—Toy Trunk.—Full Saratoga style, covered with imitation leather, with tray divided into compartments. Size 14 inches long, 9 inches wide, with Lock and Key, iron-bound and wood Fenders. From the same firm as No. 284. *Three* subscriptions, at $1.50 each, will secure this [or we will supply it for $2.00]. Too large to mail. Expressage to be paid by the receiver in either case.



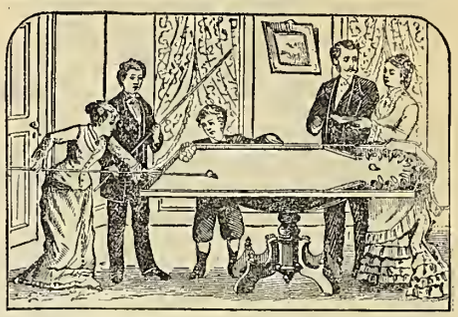
No. 293.—Nest of Toy Tubs.—These are made of Cedar, and brass-bound, strong and durable. Three sizes—9-inch, 8-inch, and 7-inch. From same firm as No. 284. One *new* subscription, at $1.50, will secure this as a premium, [or we will supply them for $1.00]. Ten cents for postage if sent by mail.

No. 294.—Vignette Authors.—This game consists of 72 cards, *each card* having a handsomely engraved portrait of an author, his name, and three of his works. The cards are finely ornamented with flowers, and are a new style. From E. G. SELCHOW & Co., 41 John St., New York. We give them for one *new* subscriber at $1.50 [or we will supply it for 60 cents post-paid.]

No. 295.—Box of Dominoes.—Made of Patent Embossed Blackwood, with light eyes; warranted unbreakable. From same firm as No. 170. Price, 60c. One *new* subscription, at $1.50, will secure this, post-paid. [Or we will send a box post-paid for 75 cents.]



No. 296.—Pedestrianism.—A very fine new Parlor Game for boys, and their Sisters and their Cousins and their Aunts, and their Parents too. It is wanted in every family. Two, three, or four persons may enter the race represented by this game. The rules and conditions of the game are distinctly printed on the face of it. This game is a most interesting one, both to players and spectators, and though but recently introduced, it is already in great demand, and will soon be in most families. We present it post-paid for 2 subscriptions, at $1.50 each. [Or we will send it post-paid for $1.25.]



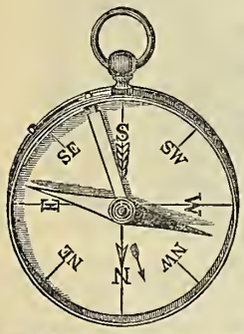
No. 297.—Billiardette.—The above engraving represents this fascinating game. Size of the board is 5 ft. 10 inches by 2 ft. 1 inch. Send your address on a Postal to this office for full descriptive circulars.

No. 1 is very neatly gotten up, and is an ornament for any room. There are ten balls and one cue put up with every table, together with printed instructions. We will present it for 10 subscriptions, at $1.50 each, [or supply it for $8.00]. No. 2 is of the same size as the above, but is made of *Fine Black-walnut*, the surface covered with *Extra Fine Billiard Cloth*, and the balls are of *Zugello*. We will present it for 12 subscriptions, at $1.50 each. The board being quite light, it can be placed on an ordinary table, and when it is not in use, it can be put away in a very small space, or be set up against the side of the room. We send one complete for $10. Each Board goes packed in a stout box. Freight to be paid by recipient.

No. 298.—Lloyd's "Dollar Maps."—We have made arrangements with the well-known Map Publishers, Messrs. H. H. LLOYD & Co., 174 Fulton St., New York, for the supply of their beautiful series of Dollar Maps. For two subscriptions at $1.50 each, we will present, post-paid, any one of the following Maps, the selection to be named when the Premium is ordered:—**1. United States** (complete).—This contains more names than most maps several times the size. The selection of places is according to their importance. All Railroads and all important Towns and Stations are shown. It is one of the best Maps for the money ever offered.—**2. North-eastern States.**—It embraces New England, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, West Virginia, Kentucky, Ohio, Indiana, Michigan, and nearly all of Wisconsin and Illinois, also Ontario and Quebec, and the entire Lake Region is shown.—**3. Western States.**—A County and Railroad Map. Very Complete. Showing Post-Offices and Stations very fully. The States of Ohio Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Kansas, Nebraska, Dakota, and most of Missouri and Kentucky are shown.—**4. Southern States.**—It is similar to the Map of the Western States. It shows the States of Delaware, Maryland, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Arkansas, Missouri, Tennessee, Kentucky, and portions of Texas and other States.—**5. South-western States.**—Contains Texas, Louisiana, Mississippi, Arkansas, Indian Territory, and most of New Mexico.—**The World** on Mercator's Projection, together with Maps of the Northern and Southern Hemispheres and Eastern and Western Hemispheres in globular form. Also a Map of Ocean Currents.—**7. Pictorial Chart of the World.**—A very attractive and comprehensive work, containing a small Map of the World on Mercator's Projection; a Globular World; Hights of Mountains; Comparative Hights of the Principal Water-Falls; Length of Rivers; a Time Dial; Great Battles and Sieges of the World; Remarkable Discoveries and Inventions; Population of Principal Cities of the World, and a great amount of other information. In the center is a magnificent view of the Capitol at Washington, from Steel, and the flags of all Nations form a border.—**8. Palestine and all Bible Lands.**—An excellent work, embracing on one sheet: Palestine on a large scale. 2. The Travels of the Apostle Paul, and the World as known to the Hebrews. 3. The Peninsula of Mt. Sinai, and the Route of the Israelites from Egypt to the Promised Land. 4. Plan of Jerusalem, Holy Places, etc. 5. A Chart of Seasons, Productions and other valuable matter.—The above Maps are of uniform size, the paper measuring 28½×40 inches. They are handsomely mounted on rollers, ready for hanging, or they will be supplied in "pocket form" at same price. For one more subscription at $1.50 (that is for three at $1.50 each), we will send either of these Maps mounted on roller with *cloth back*. [Or, we will send any one of them post-paid, for $1.00 each, or, with *cloth* back. $1.50 each,]

Subscriptions for **English** or **German** Editions are at the same rates, and count alike for Premiums, together or separately.

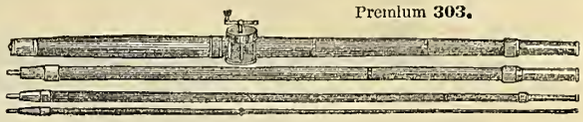
No 299.—The new People's Map of the United States.—From Messrs. H. H. Lloyd & Co. A new, Distinct, Accurate and Attractive Work, size 40×56 inches. This Map gives a clear view of the States and Territories of "our Great Republic," its Railroad System, and the principal Cities and Towns. It is adorned with views, from steel, of the Capitol at Washington, Mount Vernon, Washington from the Monument, and New York. Also a Map of the World, globular form. On the reverse side are maps of The World on Mercator's Projection, Europe, North America, and Palestine. Also the Census of the United States for 1870, by Counties, Population of Principal Cities, and a list of Remarkable Discoveries and Inventions, forming, altogether, an exceedingly useful and attractive Work.—Price $2.75. It will be sent by us, post-paid, for *Four* subscriptions at $1.50 each. [Or we will supply one, post-paid, on receipt of the price, $2.75.]



No. 300.—Pocket Compass.—Made of brass, open faced, glass covered, with jewel balance. Very useful, and can be easily carried in a pocket. Sent post-paid, for *Two* subscriptions, at $1.50 each, [or for price, $1.25.] From Hodgkins & Haigh, 298 Broadway, N. Y. (A pocket instrument to quickly give the points of compass at all times is very convenient. A very pretty one in gold case, for the watch chain, is offered in No. 4.

No. 303.—Fishing Rod.—Four joints, Trout Rod, full mounted, hollow Butt, with extra lancewood Tip, with Click Reel. From Hawkes & Ogilvy, 298 Broadway, N. Y. *Eight* subscriptions at $1.50 each, will secure this very excellent Fishing Rod. [Or we will supply one for the price, $6.] Expressage in either case to be paid by receiver.

Premium 303.



No. 304.—Fishing Rod.—Four-jointed Brass Rod, full mounted, hollow butt, 2 lancewood tips, best balance-handle reel. *Ten* subscriptions at $1.50 each secures it [or supplied for $7.] Receiver to pay expressage.

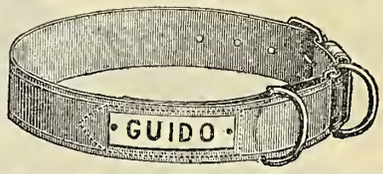
No. 305.—Fishing Tackle.—Lot No. 1.—Consisting of 60 feet fine braided oiled-silk line; 1 doz. trout hooks on gut, assorted; 1 fine 3-feet gut leader; 1 paper split-shot trout sinkers. *Two* subscriptions at $1.50 each, will secure this [or we will supply it for $1, p-paid.]

Lot No. 2.—Consisting of 75 feet fine braided oiled-silk line; 1 doz. trout hooks on gut, assorted; ½ doz. superfine trout flies; 1 fine 3-feet gut leader; 1 box split shot trout sinkers; 1 bait box. 3 subscriptions at $1.50 each will secure this [or we will supply it for $2, post-paid.]

Lot No. 3.—Consisting of 84 feet braided line, for bass or pickerel; 1 pickerel spoon; ½ doz. pickerel hooks on gimp snells; ½ doz. bass hooks on twisted gut; 2 sinkers; 1 float. *Two* subscriptions at $1.50 each will secure this [or we will supply it for $1.00, post-paid.]

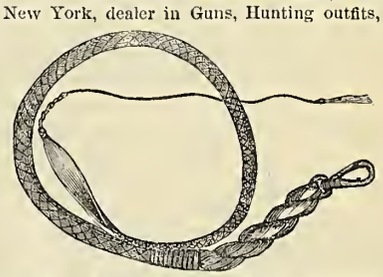
Lot No. 4.—Consisting of 1 fine braided trolling line, for Bass and Pickerel; 1 best fly trolling spoon; 50 feet fine linen line; ½ doz. pickerel hooks on gimp snells; 2 doz. bass hooks on twisted gut; 1 fine double gut leader; 2 sinkers; 1 cork float. 3 subscriptions at $1.50 each will secure this post-paid [or we will supply it for $2.00 post-paid.] All this fishing tackle is supplied by Hawkes & Ogilvy, 298 Broadway, N. Y.

No. 310.—Dog Collar.—Combination slip and straight Collar; heavy bridle leather; nickel-plated D buckles; name plate. Impossible for dogs to slip this



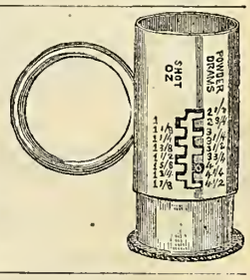
collar, as it tightens with pulling, and loosens as soon as the strain is off. [From Thomson & Son.] Presented, post-paid, for *Two* subscriptions at $1.50 [or supplied for $1.00].

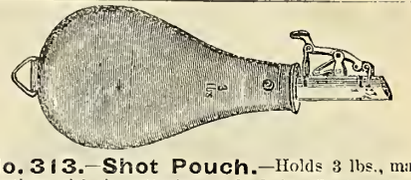
[The following six Premiums are supplied to us by the well-known firm of Hodgkins & Haigh, 298 Broadway, New York, dealer in Guns, Hunting outfits, etc.]



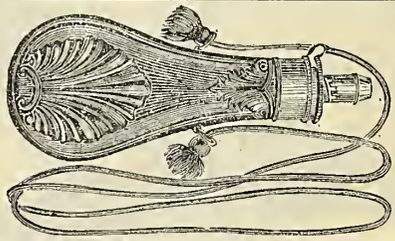
No. 311.—Dog Whip.—Made of double twisted leather, patent swivel; can be rolled up and carried in pocket or attached to coat or saddle. Presented post-paid for one *new* subscriber at $1.50, [or for the price, 75 cents.]

No. 312.—Shot and Powder Measure.—Made of Britannia, with ring handle and slides. Very convenient, and can be readily carried in the vest pocket. It has gauges for both powder and shot. Presented post-paid, for 50 cents, or mailed, post-paid, for one new subscriber at $1.50.

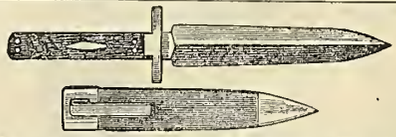




No. 313.—Shot Pouch.—Holds 3 lbs., made of leather, with ring attachment for belt. Sent post-paid for *Two* subscribers at $1.50 each [or for the price, $1.25].



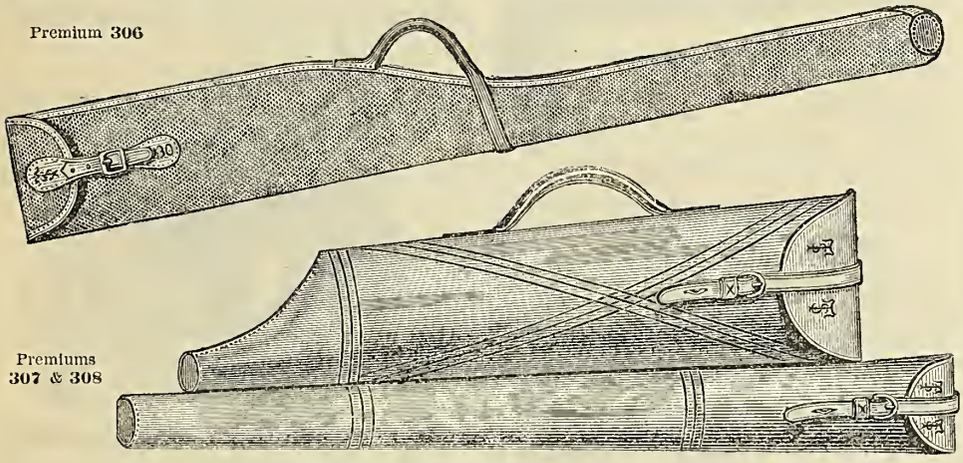
No. 314.—Powder Flask.—8 oz., made of copper, with patent top and cord attachment. Sent post-paid for *Three* subscribers at $1.50 each [or for $1.75.]



No. 315.—Double-Edged Hunting Knife.—Made by Joseph Rodgers Sons, Sheffield, England. Six-inch blade, best of steel, solid buck horn handle, in metal-bound leather case. Intended to be worn either in the belt or pocket. Presented post-paid for *Four* subscriptions at $1.50 each [or for the price, $3].

No. 316.—Dog Call or Whistle.—Britannia metal, handsomely ornamented, with ring attachment. Sent post paid for 50 cents, or presented, post-paid, for one new subscription at $1.50.

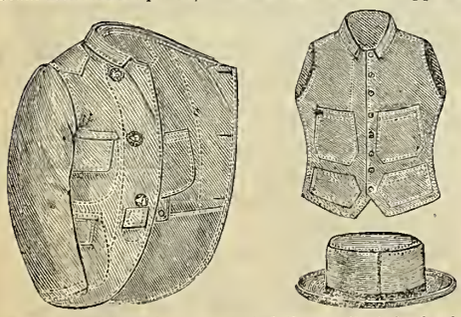
Premium 306



Premiums 307 & 308

No. 301.—Pocket Bull's-Eye Lantern.—Throws a very strong light; can be carried easily in the pocket; hight, 6 inches; width, 3½ inches. Presented free of carriage for 2 subscribers at $1.50 each.

No. 302.—Hunting Suit (Thomson & Sons, 301 Broadway, N. Y.)—Coat, pants, vest, and hat. Made of extra quality duck (water-proof), dead grass color, equally serviceable for either summer or winter use. We believe this to be as good and as cheap a hunting suit as was ever offered American sportsmen. Coat, $4; pants, $2.50; vest, $2.50; hat, $2. We will warrant these goods to be all well made, buttons riveted on.—Rules for Measurement: Send breast measure and length of sleeve, from middle of back to wrist, with arm raised and bent, for coat; breast measure for vest; waist and inseam measure for pants; size of head for hat. Supplied



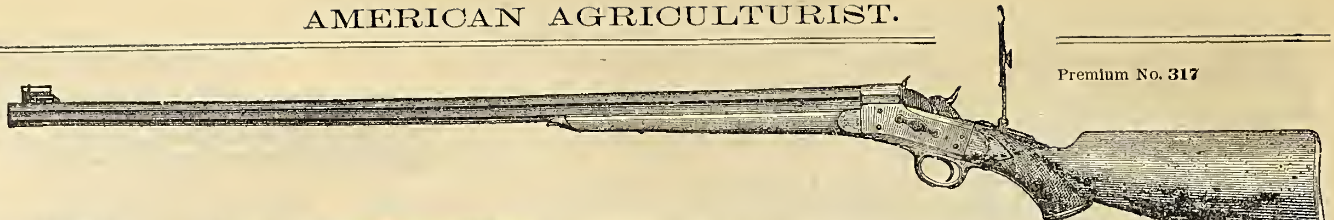
at the prices named, or presented thus: Coat for 6 subscriptions at $1.50 each; the Pants for 4 subscriptions at $1.50 each; the Vest for the same number, and the Hat for 3 subscriptions at $1.50 each. Or all of the four for 13 subscriptions at $1.50 each. Recipient to pay expressage.

No. 306.—Canvas Gun Cover, full length. Made of heavy water-proof canvas, lined with flannel, with leather handle and binding. Supplied for the price, $1.50; or presented for 2 subscriptions at $1.50 each. The expressage to be paid by the recipient.

No. 307.—Fine Gun Case, Victoria, (Thomson & Sons, 301 Broadway, N. Y.)—Leather gun case, made of heavy bridle leather, will fit any gun, can be carried in the hand same as a valise, or can be checked. Supplied for the price, $5.50; or presented for *Seven* subscriptions at $1.50 each. Expressage paid by receiver.

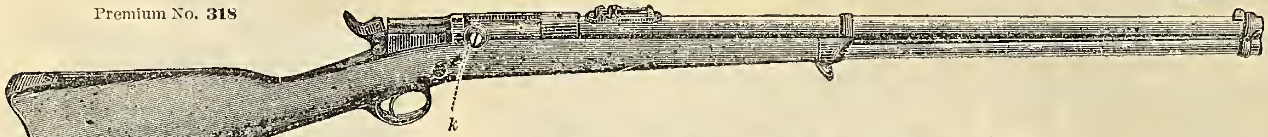
No. 308.—Canvas Gun Case, same shape as above, Victoria. (By same makers); made of heavy water-proof canvas, lined with flannel. Supplied for the price, $1.50; or presented for 2 subscriptions at $1.50 each. The expressage to be paid by the recipient.

No. 309.—Sporting Shoe (Thomson & Sons, 301 Broadway, N. Y.)—Made seamless, with broad Scotch sole, low heel, English grained leather, either black or red, with or without hob nails. This shoe has been adopted by the Secretary of War for army use. Send size of boot or shoe worn. Presented for only 8 subscriptions at $1.50 each, [or supplied for the price, $7]. Receiver to pay the expressage.



Premium No. 317

Premium No. 318



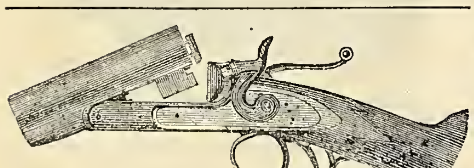
No. 317.—Long Range Creedmoor Rifles (Remington's) used by most of the successful competitors at International, State, and other rifle contests. A great desideratum for shooting one-third to five-eighths of a mile or more, at game or otherwise. It is supplied with *Vernier Sight, Wind Gauge, and Spirit Level*, and "pistol grip" stock. This is the same gun, or improved if possible, that cost us $108 not long ago. We will now present it for 75 subscribers at $1.50 each, or supply it for $80.00. Carriage to be paid by receiver.

No. 318.—Frontier Repeating Rifle, carrying 9 cartridges, of Government size (45-100 calibre, 70 grains powder), in tube under barrel. A simple quick motion with the knob, *k*, throws out the fired shell, and brings in a loaded cartridge ready for firing. The entire 9 shots can easily be made in less than half a minute, and another 9 cartridges can be put in ready for firing, in 10 or 15 seconds. Plain Walnut stock, with swivels for slings. Length of barrel, 24 inches. Plain open sights. Price $22.00, or presented for 24 subscriptions at $1.50 each. Same gun, with Combination Peep and Open Rear Sight, with Beach Front Sight, $27.00. Presented for 29 subscriptions, at $1.50 each. Expressage paid by receiver.—N. B. Those desiring a *longer barrel* can have the Army Rifle, barrel 32½ inches long. Other items, as calibre, 9 cartridges, prices, etc., the same as the Frontier Rifle.

No. 319.—Sporting and Hunting Rifle—Breech-Loader (Remingtons').—Sporting stock, plain open sights; 26-inch barrel, using 38 or 44 calibre rim fire. Supplied at the price, $30; or presented for 30 subscribers at $1.50 each. Carriage paid by receiver.

No. 320.—Sporting and Target Rifle—Breech-Loading (Remingtons').—24-inch barrel, 22, 32 or 38 calibre; weight from 5 to 6 pounds. Supplied at the price, $20. Or it will be presented for 20 subscriptions at $1.50 each. Carriage to be paid by recipient.

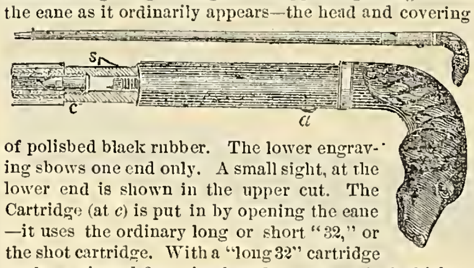
No. 321.—Single-Barrel, Breech-Loader (Remingtons').—Sixteen gauge, *thirty-two-inch plain barrel*, weight 6¼ pounds. Plainly made, but shoots just as well as the most costly carved and ornamented weapons. Can be loaded and fired 5 to 10 times a minute: cleaning-rod and loading-stick, accompany the gun. We will present this for 19 subscribers at $1.50 each [or supply one for the price, $18.00]. Carriage to be paid by receiver.



No. 322.—Double-Barrel, Breech-Loading, Central Fire Shot Gun (Remingtons').—10 or 12 gauge, 28 or 30-inch barrel; weight, 8 to 8¾ pounds. Decarbonized steel barrels, using paper or brass cartridges, that can be reloaded many times; two dozen of which, and reloader (costing $3.60), and 500 primers, or caps (costing $1), are given with the gun; one of the finest guns ever offered the American sportsman, combining all the most desirable features of the best imported, together with some valuable improvements not found with any other. Price of gun, $40. Total, $44.60. We will supply it at this price, or will present the whole for 40 subscriptions at $1.50 each. Carriage paid by receiver.

No. 323.—New Model Breech-Loading Duck Gun (Remingtons').—30 to 32-inch, 10 gauge, weight 9¾ and 10 pounds, rebounding locks, top extension, rib fastening, walnut stock, decarbonized steel barrels. Supplied for the price, $50. Or presented for 45 subscribers at $1.50 each. Carriage paid by receiver.

No. 324.—A Cane Gun (or **Gun Cane**).—This is a remarkably convenient and *effective* weapon, which, when not in use, has all the appearance of a fine ebony, or hard-rubber Cane, and yet it can, in an instant, be changed to a Rifle (or Shot gun) which shoots accurately and to a long distance as a rifle of 32-100 calibre (or 22-100 when preferred). The writer recently carried one many thousand miles, simply tied with an umbrella by means of a rubber strap. It attracted no attention save when explained, and then it excited the admiration of all who saw it. On one occasion a hawk was shot from the top of a tree over 80 feet high, and sundry small birds desired for preserving as specimens, were killed with the shot cartridges—a new device in which 65 No. 9 shot are packed in a peculiar cartridge that holds them together while in the barrel, and prevents their leading the grooving. The upper engraving shows the cane as it ordinarily appears—the head and covering



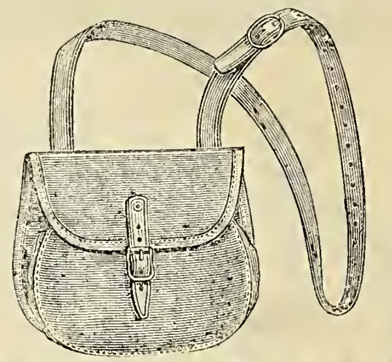
of polished black rubber. The lower engraving shows one end only. A small sight, at the lower end is shown in the upper cut. The Cartridge (at *c*) is put in by opening the cane—it uses the ordinary long or short "32," or the shot cartridge. With a "long 32" cartridge we have pierced five pine boards, each one inch thick.—It is entirely safe. To use it, a quick vigorous pull opens the cane at *c*, the rear sight *s* flies up, and the two sights being far apart, pretty accurate range is obtained. Depressing the small trigger (*a*) fires the charge, but only when specially set for firing. A cork or plug in the lower end to keep out dirt, fits the cane for a good walking stick. The 32-100 size weighs 29 ounces; diameter of cane ⅞ths of inch. The 22-100 size weighs 18 ounces. We prefer the larger size, but either size is supplied at the same price ($10). It is thoroughly made by the Remington Works, and is supplied to us by A. ALFORD, 281 Broadway, New York. Ours has been fired some 400 times, or more, and is in perfect order. For lightness as a cane, and for mere target practice, the 32-100 calibre answers; we prefer the 32-100 calibre for most effective shooting. We will present one of either calibre desired, in return for only 12 subscriptions, at $1.50 each. [Or send one on receipt of $10]. Expressage to be paid by recipient. The *ball* cartridges can be obtained anywhere. The *shot* cartridges are a new invention, as yet only made 22-100, 32-100, and 38-100, and are not yet generally obtainable. They cost about 85 cents per box of 50, at retail. We will send one box of these (32-100) for each additional subscriber at $1.50, or send, with the gun, one or more boxes at 50 cents per box, when desired.

No. 325.—Revolver, Iroquois (Remingtons').—Nickel-plated, seven shooter, steel barrel and cylinder, 22 calibre; weight, 7 ounces. Sent post-paid for $2.50, or presented for 4 subscriptions at $1.50 each, and sent post-paid. The best Revolver ever offered for $2.50.

No. 326.—Revolver.—(The Southern).—A very effective new Pistol; 32 Calibre, Five-Shooter, long Fluted Cylinder. Cylinder and Barrel best Cast Steel. Weight. 10 ounces. We present it for only 4 subscribers at $1.50 each, and mail it post-paid, for 12 cents extra. [Or, we will send it post-paid for $3.00].

No. 327.—Remington No. 2 Revolver (Smoot's patent).—Full plated, five shooter, three-inch barrel, 6¾ inches long, using 32 calibre cartridge. Mailed post-paid for $8.00; or presented and sent post-paid for 10 subscribers at $1.50 each.

No. 328.—Improved Army Revolver (Remingtons').—Central fire, six shots, 8-inch barrel, 13¼ inches long, 44 calibre; weight, 2 pounds. Loaded and shells thrown out without removing cylinder. Sent post-paid for the price, $18; or presented for 19 subscriptions at $1.50 each.—Sent post-paid.



No. 329.—Cartridge Bag.—Made of heavy water-proof canvas, and will hold 70 rounds. From THOMSON & SONS, 301 Broadway, N. Y. Presented for two subscriptions at $1.50 each, [or we will supply one of them for the price, $1.50.] Expressage paid by recipient. ☞ If to go by Mail, send 25 cents to pay postage & packing

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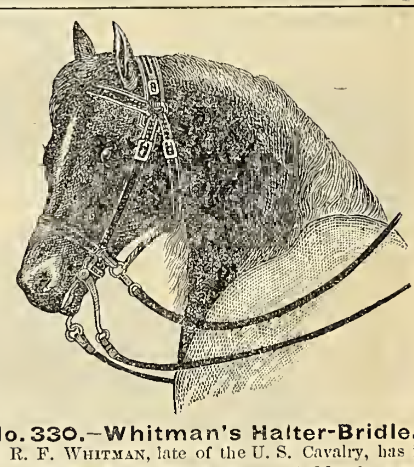
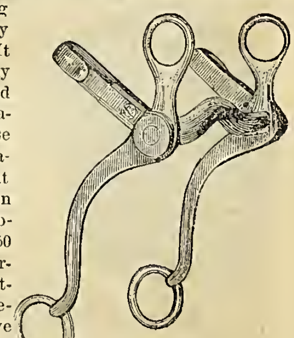


No. 330.—Whitman's Halter-Bridle.—Col. R. F. WHITMAN, late of the U. S. Cavalry, has invented a Halter-Bridle, that is commended by those who are familiar with the wants of such as ride horseback for business or pleasure. The accompanying engraving represents the Halter-Bridle ready for use. The bit is fastened to the lower rings in the head-stall, by snaps, which enable it to be detached in a second, leaving the horses mouth free to feed, yet secured to any hitching place by the halter-rein, as shown above. These Bridles are made of the best material, and are well worth the money asked for them. They have been adopted by the U. S. Army in General Orders, and are now "regulation." To enable our readers to secure this Bridle, we will, on the receipt of *Seven* subscriptions at $1.50 each, forward one of them by express [or, will supply one for $5], the receiver in either case, to pay expressage.

No. 331.—Whitman's Patent Bit.—The accompanying engraving represents one of Col. R. F. WHITMAN's improved riding bits. It is made of iron, with steel spring snaps, and heavily covered with tin. It can be used in any bridle, or five-ringed halter, and is admirably adapted for use about a farmer's stable. We will present two of these bits on receipt of *Two* subscriptions at $1.50 each. [Or, will furnish one for 75c. post-paid]. If parties prefer, they can have their choice between a riding bit as above,



or a loose-ring driving bit of same make, and same price. These have been adopted by the U. S. Army Board.

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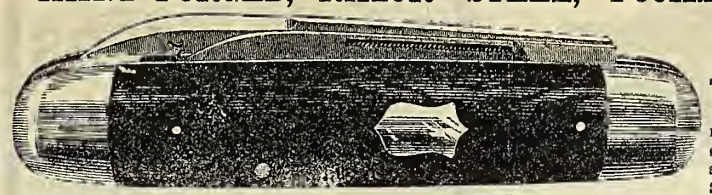

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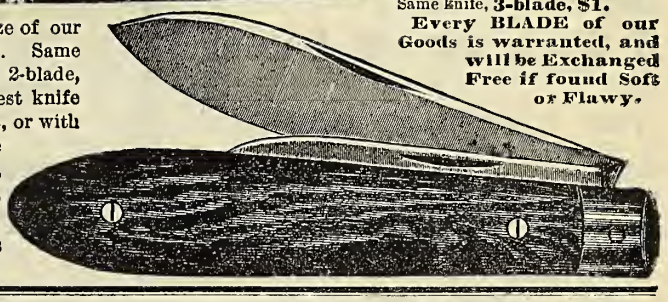

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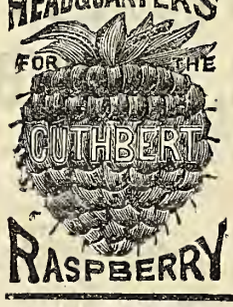

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This is the only fertilizer containing all the soil elements found in each crop. Analysis will prove **that they contain a larger percentage of plant-food elements** than we claim for them by the labels placed on each package. Six years' experience has conclusively established the above fact. Send for circular. A few good agents wanted. Address

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Hay Cutters

Superior to any in the Market.

A. B. COHU,
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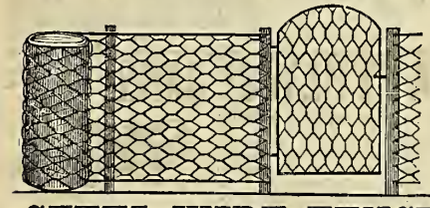

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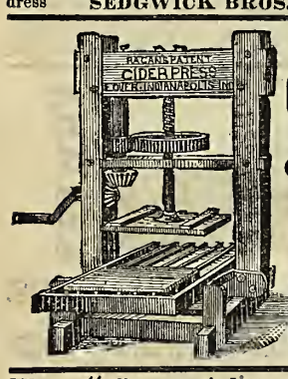
Is the only general purpose wire fence in use. Being a strong net-work without barbs, it will turn dogs, pigs, poultry, as well as the most vicious stock, without danger to either fence or stock. It is just the fence for farmers, gardeners, stock-raisers, and railroads; very desirable for lawns, parks, or cemeteries. As it is covered with rust-proof paint it will last a lifetime. It is superior to boards in every respect, and far better than barbed wire. We ask for it a fair trial, knowing it will **wear** itself into favor. The **Sedgwick gates,** made of wrought iron pipe and steel wire, defy all competition in neatness, lightness, strength, and durability. Ask hardware dealers, or for price list and particulars address **SEDGWICK BROS., Richmond, Ind.**



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ALSO

Grater, $35.

Send for Circulars.

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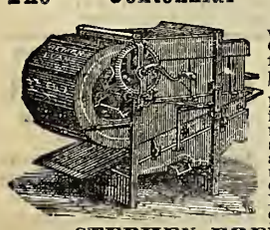
The "Centennial" Fanning Mill.



The best mill in the world. It separates Oats, Cockle, and all foul stuff from wheat. Is also a perfect cleaner of Flax, Timothy, Clover, and all kinds of seeds. The great improvement over other mills is that it has two shoes. It is especially adapted for warehouse use. Send for Descriptive Circular and Price List. Liberal discount to dealers.

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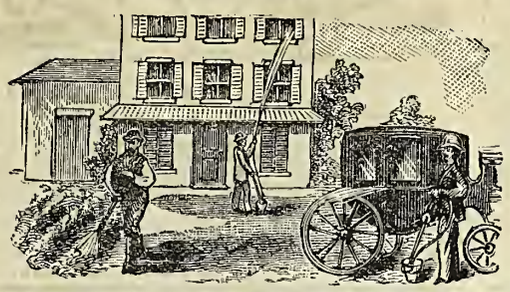

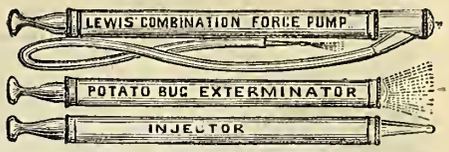

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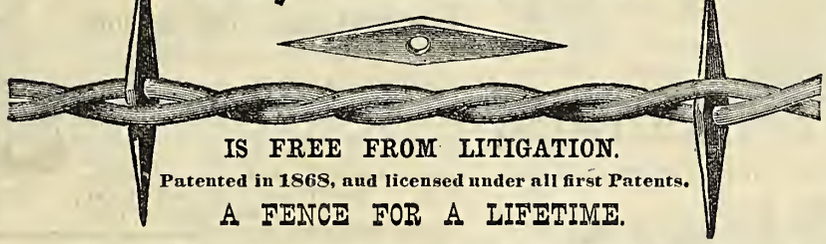

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Storm-Proof,
Fire-Proof.
Weight only
One Pound
to the Rod.

IS FREE FROM LITIGATION.

Patented in 1868, and licensed under all first Patents.

A FENCE FOR A LIFETIME.

Has No Superior, and Admits No Equal.

The Kelly diamond-shape **Steel Barb** is placed on the wire without loss of metal, leaves no room for moisture to rust the wire, retains its sharp points, **and saves** fully **10 per cent in weight per rod.**

BUY NO OTHER.

If your Merchant don't keep it, send direct to Manufacturers. Send for Catalogue.

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The Best and Most Durable of All Barb Wire in Use.

A sure protection, cheaper than board or rail fence, and good for a lifetime. Wastes no ground. Has no weedy fence row. When the best costs no more than an inferior article, always look for the **best.** We claim for the **Frentress a Superiority over all other Wires.** For Circulars and Price Lists address

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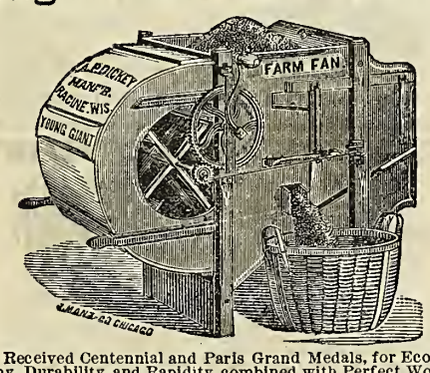
Highest and Best Award



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1880.

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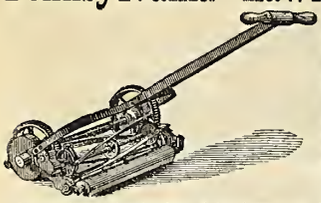

Surpassing all others and pronounced **the best,** lightest, runs more easily, cuts longer grass, is more durable, requires less repair, cuts grass more smoothly, is less liable to obstruction, is of handsome appearance.

Penn. State Agricultural Society says, "It will, we believe, wear longer, do the work better with less labor than any other Mower. One of the peculiarities is that it will cut higher grass than any other Mower."

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This machine has been sold in every State in this country, and in almost every Grain growing section on the Globe, giving entire satisfaction everywhere to every intelligent operator. Price $6.00. Does the work of 5 men.

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MEDAL MACHINES.

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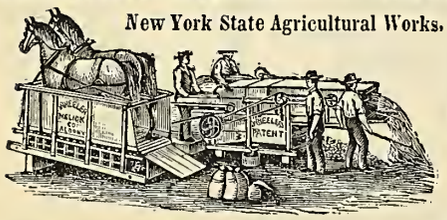

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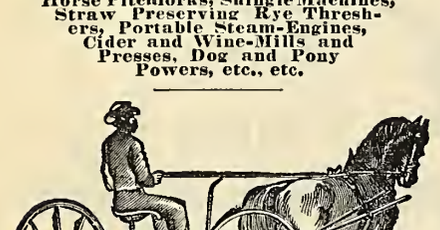

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Light, Simple,

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Being jointed in the center, is adapted to both smooth and uneven surfaces. Acknowledged the best of the kind, and will pulverize and cover seed better in one operation, than going over twice with others. Made with both Chilled Metal and Cast Steel Discs polished. Send for circular and price list. Manufactured by

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FOR BEST FLOUR BY THE

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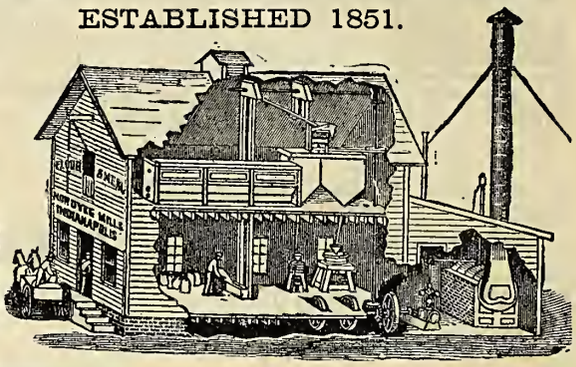

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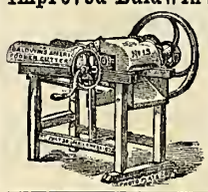

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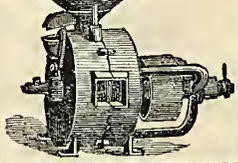
NEWLY IMPROVED.



New Standard Flouring Mill. New Standard Corn Mill.

Capacity of 12-inch Mill, 2 to 12 bus. per hour; capacity of Light 20-inch Mill, 6 to 40 bus. per hour.

Wholesome Bread, Fine Flour, High Speed, Quick Work, and Economical Milling Fully Established. For illustrated catalogue, describing the Harrison System, address Estate of

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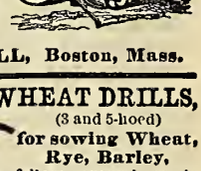
The Standard of America.



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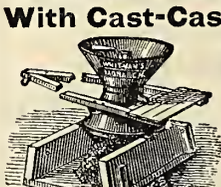

The most perfect mill yet invented. *Warranted* to grind faster, run lighter, and wear four times as long as any other.

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Satisfaction guaranteed.

Many thousands in use, giving perfect satisfaction where others fail.

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for sowing Wheat, Rye, Barley, in fallow ground or in standing corn. Force feed; simply constructed. The five-hoed is adjustable for different widths, and is just what every small farmer ought to have, saving the price of a two-horse drill.

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These cuts represent our 20 Steel-Tooth Horse-Rake, with Iron Hubs (or Locust Hubs boiled in oil)—9,000 in use—and our Positive Force-Feed Grain, Seed, and Fertilizing Drill (which can be changed to sow any quantity while Drill is in motion), with Pin or Spring Hoes—8,277 in use and giving satisfaction. All manufacturers say theirs are the best. All we ask is, send for *Descriptive Circular and Price-List*, which contains letters from persons using them. All *warranted.*

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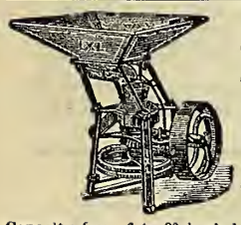

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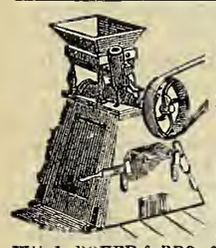

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Is simple, durable, and cheap. Grinds all kinds of grain rapidly. Is adapted to all kinds of horse powers. Also, Manufacturers of Union Horse Powers, Threshers and Separators. *Send for Descriptive Circular.*

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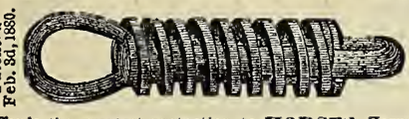

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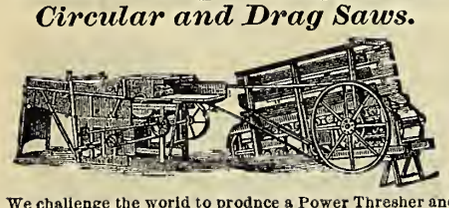

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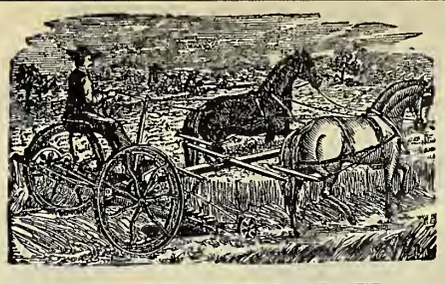

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☞ It lessens the expense of gathering the Hay Crop fully twenty-five per cent. Address

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This rake has taken more first premiums than any other rake.

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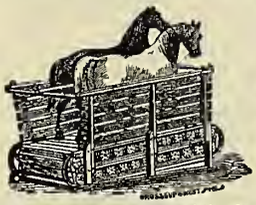

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These Powers are **GUARANTEED** to produce more Power with **LESS ELEVATION** than any other Railway Power. Send for descriptive catalogue. WM. L. BOYER & BRO., 2,101 Germantown Ave., Phila., Pa.

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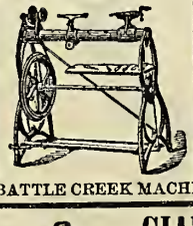
Pleasure for Amateurs



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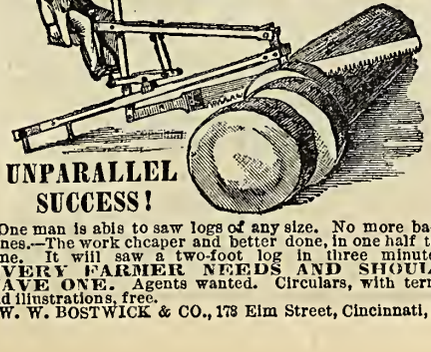
Will actually do the work of four men, **Quicker** and **Better.**



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It is ALL IRON. Is Self-Regulating. Will pump with less wind than any mill ever made. Will not shrink, warp, split, decay, and will stand more work than any mill extant.

DON'T BUY till you have received our Circular.

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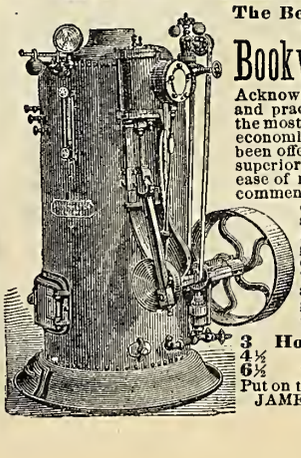

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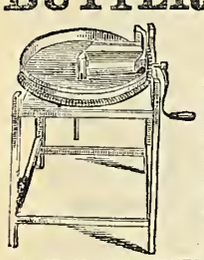

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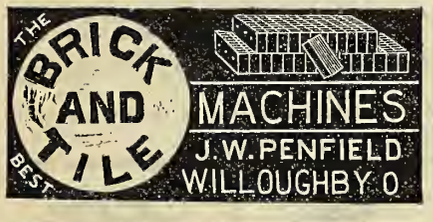

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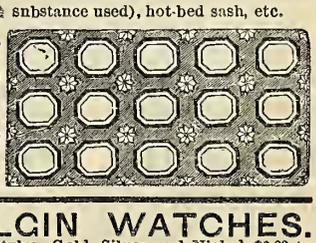

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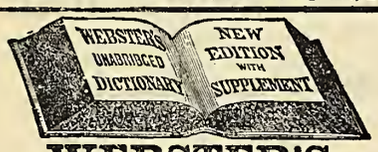

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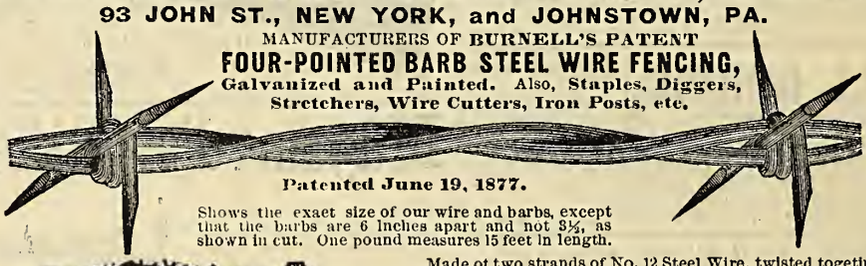

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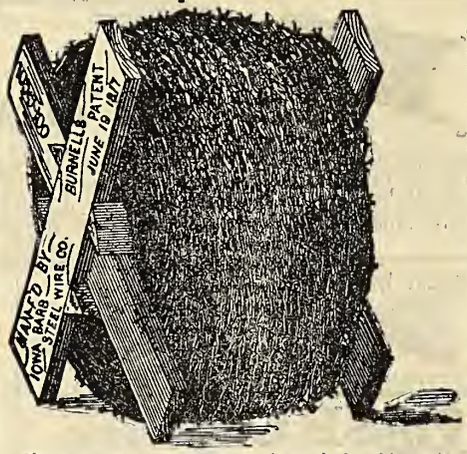

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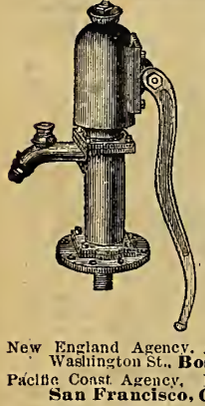

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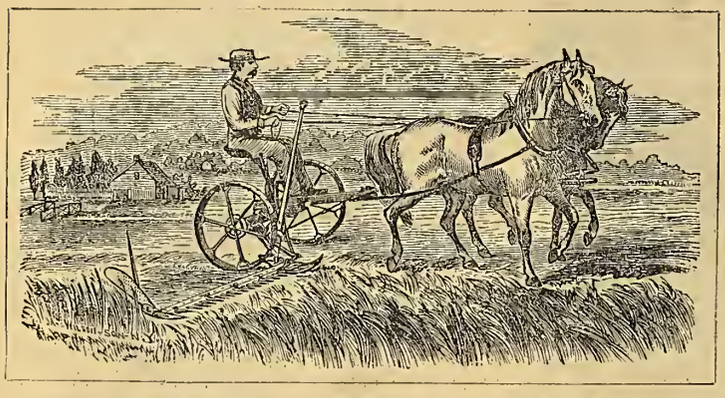

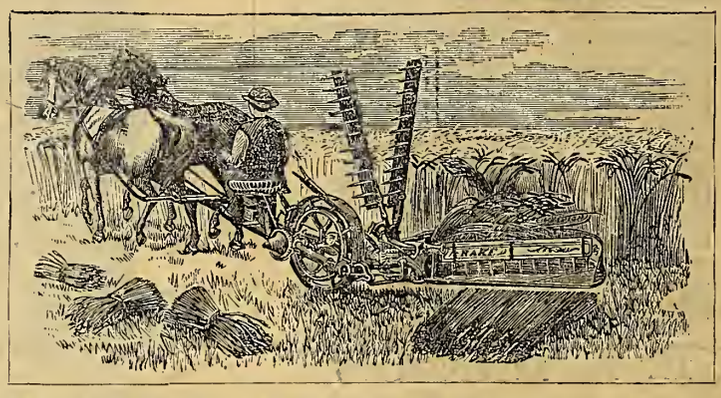

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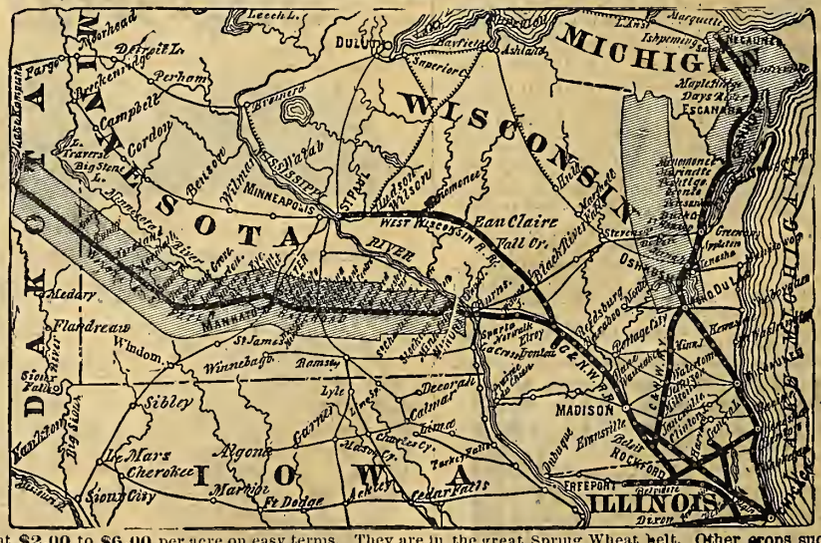

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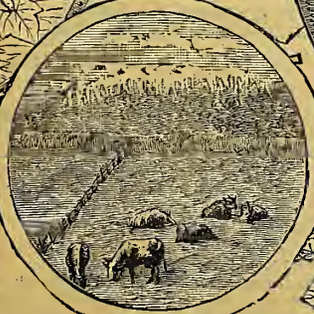

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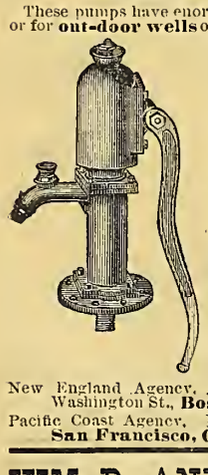

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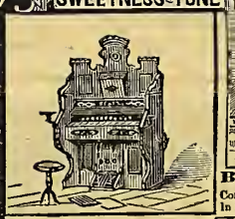

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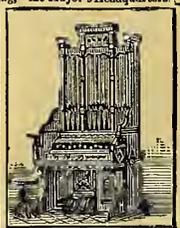

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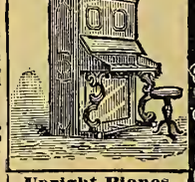

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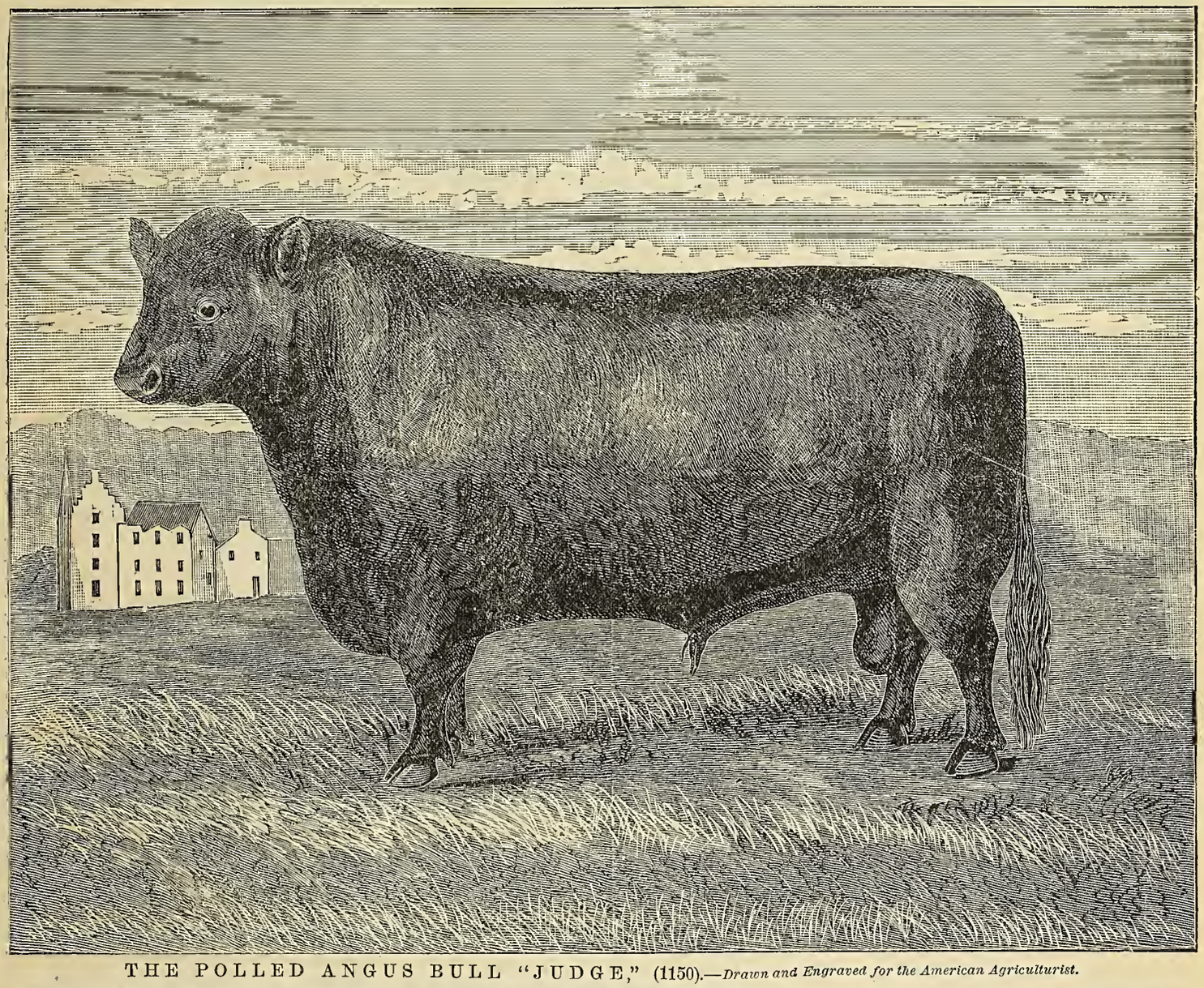

THE POLLED ANGUS BULL "JUDGE," (1150).—*Drawn and Engraved for the American Agriculturist.*

The fine bull "Judge," now five years old, was recently purchased of his breeder and successful exhibitor, Sir George Macpherson Grant, Bart., M.P., of Ballindalloch, Strathspey, Scotland, for the Whitfield Model Farm at Rongemont, Parish of St. Cesaire, County of Ronville, Province of Quebec, Canada. He is one of the most famous prize-winners of his breed in the world, having crowned a very unusual list of winnings at Scotch shows in the years 1876 and 1877, by winning the first prize and gold medal at the Paris International Exposition in 1878 as a three-year-old Angus, or Aberdeen bull. His pedigree includes several of the most famous of the foundation stock of this remarkable beef breed, now growing so rapidly in favor on both sides of the Atlantic. With him are imported a number of excellent cows of his own breed—the Angus, or Aberdeen—and both males and females of the Hereford, Ayrshire, Galloway, West Highland, and Shetland breeds, all bought by Mr. Whitfield and destined for his model farm, at which herds of Shorthorns, Devons, Ayrshires, Jerseys, and Kerrys, are already established. We are informed that this varied stock has been selected with great care, and with a view to secure the best possible representation of the respective breeds. The Galloways, West Highlands, and Shetlands, have been rarely seen in this country; the last-named never before, so far as we know.

The above portrait is from a photograph taken at the time of the Paris Exposition of 1878. "Judge" has since that time altered somewhat in form, as would be expected, having become broader, deeper, and more massive, with no loss of the nearly perfect symmetry represented in the engraving. His pedigree in the line of dams, is as follows:

"Judge" (1150), bred by Sir George Macpherson Grant, dropped February 7th, 1875; sire, "Scotsman" (474), by "Jim Crow 3d" (350).
Dam "Jilt" (973), by "Black Prince" (366).
Gr. dam "Beauty" (1180), by "Young Jock" (4).
G. gr. dam "Favorite" by "Gray-breasted Jock" (2).

The attention of the readers of the *American Agriculturist* has been repeatedly directed to this fine breed. The advantage which they offer to shippers of live beef in having no horns is of itself of great importance, but when we consider that they hold their own with the best families of the Shorthorn breed, which they rival in size, as economical beef producers and quick feeders, it seems certain that they are soon to become the favorite breed for the chief beef-producing regions of this country, especially for the Great Plains and Texas. A few years ago the experiment was fairly tried by the introduction of a fine bull or two of this breed in Central Kansas, and all who have handled his progeny are anxious for more, and are taking steps to procure them. Half-bred bulls impress their characteristics strongly, and few horns appear on either sex before the third generation. Of course in herding and handling in droves, they are not dangerous to horses or men, even should they inherit the disposition of the Texan cattle, which have a reputation for fierceness. The improved beef-breeds are all docile, gentle, and easily handled, and the Angus particularly. They are by no means defenseless, as some might think; but with the poll-knob, which is largely developed, they strike terrible blows and make a good fight if necessary.

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Nitrification, or the formation of available compounds of nitrogen is now generally thought, by scientific men, to be due to the action of a living organism—a minute fungus—and the process is a fermentation like that which is caused by the yeast plant.

Calendar for October, 1880.

Day of Month.	Day of Week.	*Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon.* Sun rises.	Sun sets.	Mo'n rises.	*N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois.* Sun rises.	Sun sets.	Mo'n rises.	*Washington, Maryland, Virginia, Kentucky, Missouri, and California.* Sun rises.	Sun sets.	Mo'n rises.
		H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.
1	F	5 57	5 42	3 10	5 57	5 43	3 11	5 56	5 43	3 13
2	S	5 58	5 40	4 16	5 58	5 41	4 16	5 57	5 42	4 17
3	S	6 0	5 39	sets	6 0	5 39	sets	5 58	5 40	sets
4	M	6 1	5 37	5 23	6 1	5 38	5 31	5 59	5 39	5 35
5	T	6 2	5 35	6 2	6 2	5 36	6 6	6 0	5 37	6 11
6	W	6 3	5 33	6 42	6 3	5 34	6 47	6 1	5 35	6 53
7	T	6 4	5 32	7 30	6 4	5 33	7 37	6 2	5 34	7 43
8	F	6 5	5 30	8 23	6 5	5 31	8 35	6 3	5 33	8 41
9	S	6 6	5 28	9 34	6 6	5 30	9 40	6 4	5 31	9 46
10	S	6 7	5 27	10 45	6 7	5 28	10 50	6 5	5 29	10 55
11	M	6 8	5 25	11 57	6 8	5 26	morn	6 6	5 28	morn
12	T	6 10	5 24	morn	6 9	5 25	0 1	6 7	5 26	0 6
13	W	6 11	5 22	1 9	6 10	5 23	1 12	6 8	5 25	1 15
14	T	6 12	5 20	2 20	6 11	5 22	2 21	6 9	5 23	2 23
15	F	6 13	5 19	3 29	6 12	5 20	3 28	6 10	5 22	3 26
16	S	6 14	5 17	4 36	6 13	5 19	4 35	6 11	5 21	4 35
17	S	6 16	5 15	rises	6 14	5 17	rises	6 12	5 19	rises
18	M	6 17	5 14	5 8	6 15	5 16	5 12	6 13	5 18	5 18
19	T	6 18	5 12	5 42	6 16	5 14	5 47	6 14	5 16	5 53
20	W	6 19	5 11	6 21	6 17	5 13	6 27	6 15	5 15	6 33
21	T	6 20	5 9	7 8	6 18	5 11	7 12	6 16	5 14	7 18
22	F	6 21	5 8	7 56	6 19	5 10	8 2	6 17	5 12	8 8
23	S	6 23	5 6	8 50	6 20	5 9	8 56	6 18	5 11	9 2
24	S	6 24	5 5	9 48	6 21	5 7	9 54	6 19	5 10	9 59
25	M	6 25	5 3	10 49	6 23	5 6	10 53	6 20	5 8	10 57
26	T	6 26	5 2	11 50	6 24	5 4	11 54	6 21	5 7	11 57
27	W	6 28	5 0	morn	6 25	5 3	morn	6 22	5 6	morn
28	T	6 29	4 59	0 53	6 26	5 2	0 55	6 23	5 5	0 57
29	F	6 30	4 58	1 57	6 27	5 0	1 58	6 24	5 3	1 59
30	S	6 31	4 56	3 3	6 28	4 59	3 3	6 25	5 2	3 3
31	S	6 33	4 55	4 12	6 30	4 58	4 11	6 26	5 1	4 9

PHASES OF THE MOON.

MOON.	BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	D. H. M.	H. M.	H. M.	H. M.	H. M.
New M'n	3 11 59 ev.	11 47 ev.	11 35 ev.	11 23 ev.	10 53 ev.
1st Qnart	10 7 51 ev.	7 39 ev.	7 27 ev.	7 15 ev.	6 45 ev.
Full M'n	17 11 42 ev.	11 30 ev.	11 18 ev.	11 6 ev.	10 36 ev.
3d Qnart.	26 2 15 mo.	2 3 mo.	1 52 mo	1 39 mo.	1 9 mo.

AMERICAN AGRICULTURIST.

NEW YORK, OCTOBER, 1880.

Hints for the Work of the Month.

[*The Hints and Suggestions in these columns are never copied from previous years, but are freshly prepared for every month, from the latest experience and observations, by practical men in each department.*]

Grass is our most important crop, and it is essential to its best condition next spring and summer that it be well wintered. The roots are benefited by the thick mulch of late autumn growth. Therefore do not feed off the meadows which it is intended to mow next year, but rather top-dress with a fine compost, which may be largely composed of swamp muck treated with lime slaked with brine.

Weeds in Grass Land may be very easily seen and destroyed this month by the use of the "spud," a broad chisel-blade attached to a handle like that of a spade or long-handled shovel, having a spur upon it for the foot to aid in thrusting it into the ground. A boy with an instrument of this kind can rapidly clear grass land of buttercups, daisies, and a multitude of other biennial and perennial weeds.

Grass Seed may be sown upon spots in both pastures and meadows where the stand is not good, and if harrowed over with a dressing of manure or some "fertilizer," will often work a complete renewal of the grass.

Winter Grain.—It is not too late to sow wheat or rye, see "Hints" for last month. More seed is uniformly required for late sowing, because the young plants will not tiller so much—that is, throw out so many shoots which will form flower-stalks and heads in the spring. To prevent smut, use a pickle of four ounces of blue vitriol, or "blue stone," to a gallon of water; when dissolved, use half a gallon to the bushel of wheat, sprinkling it over the heap on a barn-floor and stirring until every grain is wetted, then dry by sifting quicklime over the heap and shoveling it over.

Top-dressing.—Bone dust or "tankings," or some fertilizer in which the nitrogen is not in the form of ammonia, and not soluble, is the best for late autumn application to grass or grain. Such a manure has some immediate effect, yet is not washed away in solution by heavy rains, but shows its potency in the spring.

Potatoes.—The sooner they are dug now the better. It is best to keep them a while either in protected heaps in the field, or on some unused floor. They throw off much moisture within a few days, and will heat if in large heaps or too deep in the bins. When thoroughly dry, they may be placed in secure pits or in the cellar. Potatoes are injured at once by frost, and gradually by sunlight, or even by diffused light. They should, therefore, be kept from the light as much as possible, and decayed ones carefully culled out before they are put away.

Roots are now making their best growth. Moderately warm days and cold nights seem to have a great effect upon them. As the time for heavy frosts approaches, secure the mangels and sugar-beets. Top by rubbing the leaves off, not by cutting, as the wound often starts decay, which spoils the beet. Carrots secure attention next after the beets, and turnips next, leaving the Swedish turnips longest. Always protect piles of roots against frost by some covering. Turnips will survive severe freezing, but they are never so good for feeding.

Corn.—There is probably little corn left standing in the region where early frosts prevail, yet after the middle of September, when a cold wave, with two or three frosty nights, passes over the Northern States, we often have a long "spell" of pleasant weather, and if corn has escaped it may still be cut, and the fodder will be good. This is, however, exactly the weather for husking, if other more pressing work is finished. If there is a market for husks, the cars may be picked and the husking done in the barn; but otherwise the husking must be done in the field, and it is poor policy to wait after the stalks are dry and the soft ears pretty well hardened. In fields where most of the stalks have two ears, and there are none without ears and they are large, a man will sometimes husk 100 bushes of ears a day, and now and then a "champion" husker will husk the corn on an acre of ground yielding 80 bushels of shelled corn or over, but other hands must bind his stalks.

Corn Fodder, by which we mean the stalks after husking (not the leaves of the corn merely stripped off), should be bound in bundles, probably best done with willow withes, and stooked up so as to shed rain. Large stooks, well set and firmly bound may be left in the field until needed for feeding, without injury to the fodder. In fact, it is often brighter and better when treated in this way than in any other. In stacks, or in sheds, it is likely to heat and mould, unless it can be more thoroughly dried than we can be sure of having it.

Fodder Corn, which, of course, was cut before the first frost, or much of its value was lost, should be handled much in the same way. As soon as the stalks are sufficiently dry, and the weather so cool that danger from moulding is past, put it up in small bundles, and set these together in large stooks in the field, bound securely at the top.

Seed Corn.—The selections of seed corn, though usually made this month, ought to be done about September first, for then one going among the standing corn can select the ears likely to produce corn most to his liking, much better than after the corn is cut up. It is best to have reference to earliness of maturity, size of stalk, ability to stand up, the number of brace roots, and the amount of leaf, as well as to the size of the ears, and the number upon a stalk. But one who is "breeding" corn should look farther; the shape of the ear is important; the butt should be small for convenience of husking, and the cob small and well covered, the rows of kernels perfectly even, and the husks long enough to protect the grain from the sight of birds, which are often tempted by the sight of the corn to do a good deal of damage. Every farmer who selects his own seed corn with care, will, in a few years, find that he has a variety of his own breeding quite different from the corn of his neighbors, and which ought to be a decided improvement on the original stock. At husking time we can only select ears, but when the selection is made among standing corn, the best plan is to tie a cord around the selected ones near the tip, so as to prevent the huskers stripping off the husks. They will then throw the tied ears aside, and they

may be gathered, husked, and sorted according to their perfection at leisure, braided together, and hung up in a dry loft, or in the peak of the corn crib.

Corn Crib.—The only perfect protection of a small building against rats, is the setting it upon posts protected by tin, by broad caps, or in some such way. A corn floor is sometimes made in the peak of the barn roof, above the tie-beams, and resting upon them fully half the length of the rafters above the eaves. This is not, however, perfect protection, though it often remains for years before the rats find any way of getting to it; it is an excellent place to keep corn and seeds of all kinds. The grain must be hoisted by a horse with a block and tackle. Free ventilation is absolutely essential to the proper curing of the corn crop, hence corn cribs and bins have open, slatted sides, and, if exposed to storms, such a slant that the rain will not drive in. The old rail pen, narrower at the base than at the top, and well thatched, with straw or stalks, cures and keeps the corn as well as the most expensive corn house, and protects it quite securely from everything except vermin.

Plowing for Spring Crops.—This may be done at any time now, where the soil is not too light, and not likely to wash during the winter. The ground should be left rough to be subjected to the fullest action of the weather, freezing, thawing, wetting, drying, etc. Should a crop of weeds come up, it will very likely pay to harrow and plow again.

Ridge Plowing of stiff clays is often of great benefit. It is done by turning the furrows two and two together, so as to leave the land uniformly ridged. The ridges must run up and down the slopes; otherwise, in heavy rains, water will be held by the ridges until it breaks through somewhere, when there will be danger of a "wash-out." This system of winter fallowing involves plowing again in the spring, but shows its good effects in the crops.

Water.—If pure water does not flow at the barn, look into means for securing it. Barn-yard wells are convenient, but often dangerous to the health, if not of animals, certainly of men, who may drink at them. If the water from some spring can be led to the house and barn, by all means bring it down—use plain iron pipes or enamelled ones—not "galvanized" pipes. Zinc is a slow poison, but not quite so bad as lead. A well on higher ground will often furnish flowing water, conducted by a siphon, at the level of the buildings. No well should be dug at a less distance than 300 feet from a barn-yard, cesspool, or privy vault.

Buildings.—This month offers the most favorable time usually for the painting and repair of farm buildings, and putting them in order for the winter. A great part of this work may be well done during this month by the farmer and his boys.

Implements, put away for the winter, should be painted or protected in some way from the action of the air and moisture. Paint or varnish for the wood-work, and a varnish of two-thirds rosin and one-third mutton tallow is excellent for protecting iron and steel.

Live Stock.—A little extra feed brings cattle and horses to the beginning of winter in good order. The tops of carrots, beets, and turnips may be fed to good advantage, and there is a great deal of sweetness in the October pasturage. Where much corn is planted, there will always be soft ears and "nubbins" which are best fed to horses and pigs.

Swine.—Pigs will fatten nearly as fast on potatoes this month as on corn next. They do best on cooked feed, and the grain ought to be ground.

Sheep.—This month we speak for March lambs. Half-fed sheep are often run into market from sections where food is scarce, and it pays well to secure such to feed for the winter, turning them off fat in the spring. The feeder should be satisfied if, by so doing, he works up his wheat straw and corn into manure, getting pay for his grain and cash outlay, and that only.

Poultry.—Early fattened poultry bring more money if marketed in October, and early in November, than at Thanksgiving and Christmas time. Thy fatten much easier, also, at this time, for it is not so cold, and they get more forage in the fields.

Notes on Orchard and Garden Work.

The present month may be said to close the season in the Orchard and Garden, and it offers an opportunity for looking back over the successes and failures of the busy growing months that are past. This is a time when the lesson to be drawn from the past may be a guide and an inspiration for the future. In the retrospect it may be found that the failure in one place was due to imperfect preparation of the soil; in another the soil was not good, and not infrequently the soil and the seed being of the best, the young plants were neglected and the crop was rank weeds instead of a paying one. The "bad luck" of the season may be due to imperfect drainage, and if so, the gardener should begin at once to remedy the difficulty. This is one of the best of the months for making drains, and having decided to improve the soil in this way, push the work in a thorough manner to completion. This is a favorable month for all labor requiring the removal of earth, and such work as the making of roads in the orchards, grading, etc., can be better done now than in the busy days of spring.

Orchard and Nursery.

Apples.—The practice of picking the fruit and putting it in heaps for a few days until the skin toughens, before barrelling, is a good one. Put the fruit into the barrel with care, shaking it down when half full, and again when full, so that the apples will fit closely when the head is pressed in by means of the barrelling press. The opposite head should be marked as the one to be opened. This season of abundant apples it will not pay to market any except the best fruit, and that in fine shape. Dry second-rate fruit or make it into

Cider.—The best cider is made from late ripening, sound fruit, and in cool weather when the fermentation is gradual. Many early apples may be worked up into sweet cider and sold as such or made into vinegar. This is one of the best methods of turning to account fruit that would otherwise be lost.

Vinegar.—The essentials for good vinegar are: good cider; a temperature of at least 70°, and as complete exposure to the atmosphere as possible. The process may be hastened by adding yeast to the cider, or "mother" from old vinegar barrels, which amounts to the same thing. Vinegar making is therefore a sort of fermentation, facilitated by a low microscopic plant of the fungus group.

Pomace from the cider press is of no great value either as a food for stock or as a manure to the land. Pigs will eat it to some extent. It should be put in the manure heap, as when left by itself in the open air it gives off a disagreeable odor.

Fruit Cellars should be in readiness, but the fruit should be kept under sheds, etc, until cold weather comes, being careful to remove it to the cellar before being exposed to severe cold. The fruit cellars should be provided with ventilators so arranged that they can be readily thrown open.

Heeling-In.—When the orchardist purchases his young trees in the fall they should be heeled-in, which, when properly done, consists in burying the roots in a place where they will keep in good order until ready to set out in the spring. The usual method is to open a trench—lay the trees in a slanting position and fill with earth. If set upright the trees are more exposed to the weather; but are less apt to be injured by mice. No unfilled places should be left about the roots; finish off with patting the surface of the soil down firmly with the back of the spade. Look well to the labels, and leave no litter near the trenches to harbor mice.

Sundry Matters.—Recently planted trees should have a conical mound of earth around them to protect from mice and act as a stay for the tree against winds. .Top-dress the orchard with fine manure ....Repair fences and gates, put away the tools in in good shape, and do the many odd jobs that will help so much when the busy days of spring come.

The Fruit Garden.

Every farmer or owner of a good-sized village lot should have a separate plot of ground devoted to small fruits. Now is a good time to decide upon this matter, and begin to have a Fruit Garden. The soil should be well drained, and if not rich, made so by an abundant supply of manure, which is best plowed under and the soil left rough until spring.

Strawberries.—If planting is done now it is pleasanter than in the spring, as the soil is in a better condition, besides it will relieve the pressure of spring work. There is no gain in the time of fruiting by planting now, unless the plants are pot-grown and are set out without any disturbance to the roots. When the ground begins to freeze the bed should be covered with litter, marsh hay, straw, etc., putting it only slightly over the plants, that they may not be smothered. In setting, fifteen inches between the rows will be the distance most suitable for working a narrow cultivator among the plants. Exercise care in selecting good sorts.

Blackberries.—It is best to set them in the fall, as they start so early in the spring, placing the plants 6 to 8 feet apart. The Snyder is coming into favor.

Raspberries should also be put out in the fall, for the same reason as for blackberries mentioned above. Set the plants in rows about 4 by 4 feet.

Grapes.—The grape-shears should be used in picking, as it allows the bunch to be cut without handling to defaee the bloom. The Concord, and similar thin-skinned varieties will keep but a short time. The Catawba, Isabella, Diana, and other thick-skinned varieties may, with care in packing, be kept until midwinter. Grapes should be picked in shallow trays, and left in a cool room for a few days, for the skin to toughen, then pack in 3 to 5-pound boxes, filling from the bottom, and tacking it on with slight pressure. Label the opposite side which will be the one to be opened. The vines should be pruned so soon as the leaves have fallen.

Kitchen and Market Garden.

The principal work of the month, in this department, will be caring for the crops that are stored, and preparing for the early spring crops. All rubbish should be cleared up and the ground manured and plowed to aid in the spring work.

Cold Frames should be made for cabbages, lettuce, etc. Light and dry soil in a sheltered place should be chosen. A rich soil is not demanded, as the plants are to be simply protected, not grown, during the winter. The object of cold frames is to protect plants that would otherwise be killed by the frequent changes of the weather—not to grow them. If the frames are to be used afterwards for growing plants, then a rich soil is required. A plank of about 12 inches wide makes the rear of the frame, and one 8 inches high does for the front, and far enough apart to hold the sashes by their ends. Two strips should pass from front to rear, where two sashes meet, for them to slide upon. The sashes should not be put on until the weather requires it. In the South, ridges of earth running east and west serve the same purpose, and take the place of cold frames in the colder regions of the northern States.

Roots.—Parsnips and Salsify improve by being frozen. Beets and carrots are injured, and should be dug before the freezing weather sets in. A supply for table use may be packed in dry earth, in boxes or barrels, and put in the cellar — the rest should go into the root-cellar or pits. The filling up of the cellar of the dwelling with various kinds of roots, fruits, etc., is objectionable, as foul gases are continually rising through the house and making the air impure.

Pits must be made where it is dry and water will not stand on the bottom. The most convenient form is a trench 3 or 4 feet deep, and 6 feet wide, and as long as needed. The roots may be put in sections with a cross wall of earth between each. In this way a portion of the roots may be taken out without disturbing the rest of the pit.

Asparagus.—The tops should be cut and burned, and a dressing of coarse manure applied to the bed.

Beans.—Lift the Limas, poles and all, at the first frost, and put them under a shed where they may be kept fresh for some time. The ripe pods should be gathered and shelled for winter use.

Beets should be dug before the frosts, and stored in pits. The tops may be fed to the cows.

Cabbage.—Gather before the frosts come, and put them in pits or trenches. Cabbages set with heads down and covered with earth, will keep well.

Carrots, like beets, should be dug before the frosts come, and stored in root-cellars or pits.

Celery not yet earthed up should be attended to. First bring the leaves together, and draw the earth to them with the hand, to hold them in an upright position. A portion for early use may be banked up now to the top of the leaf-stalks.

Lettuce.—Sow in cold frame for early spring use.

Onions.—If sown in the fall the young plants must be covered with litter to keep the frost from heaving them out of the ground.

Parsnips.—Dig enough for present use and store in the cellar, and leave the rest in the ground, where the frost will sweeten and improve them.

Spinach.—Thin as required for use, giving the plants to be wintered a plenty of room. Keep clean of weeds to insure a good crop.

Squashes.—Gather before the frost injures them, and handle carefully to avoid bruising. Use the least ripe first, and store the others in a cool place.

Sweet Potatoes should be dug so soon as the leaves are injured, and placed where it is warm and dry.

Tomatoes.—When danger from light frosts is apprehended, the season may be prolonged by protecting the plants, or some of them, by cloths or papers. Some pull up their vines and hang them up in sheds, etc., for the same purpose.. Secure the green tomatoes in sufficient quantities for spiced and other pickles, before the frost injures them.

Flower Garden and Lawn.

A mistake is made by many in ceasing to care for the Flower Garden as soon as the first frosts come, as they thereby deprive themselves of some weeks of enjoyment. In the climate of New York City, late September or early October usually brings frosts that are heavy enough to demoralize the Coleuses, and like tender plants, while the more robust ones, Geraniums, etc., are but slightly injured. After a few mornings of these early frosts, it often happens that there is a whole month of good weather, which is the finest of the year. Let he delicate plants go and give all the more care to those that may be saved with a little pains taken in protecting them. The tender plants that have been killed by the frosts should be removed at once.

Dahlias are spoiled by the first hard frost. Cut the stalks near the ground and lift the roots, selecting a warm day, and doing the work in the morning that the roots may dry all day in the sun before putting them away. Be sure to securely label the different varieties, and put them away in a cellar that is suitable for keeping potatoes.

Cannas.—The roots should be dug before the foliage is killed by the frosts, otherwise it will be difficult to keep them through the winter. It is better to lose a little of the beauty by early digging than to have the roots injured. The roots must not be allowed to wither before putting them in a dry warm place for the winter.

Chrysanthemums that are to flower in-doors should be potted at once. Those that are to bloom in the borders should be tied up and kept in good shape.

Spring Bulbs should be planted as soon as they can be obtained from the dealers. Double Tulips are very showy, and are deserving of more attention than they receive. The beds for the bulbs should be enriched with old well-rotted manure.

Tender Bulbs, like Tiger-flowers, Gladioluses, etc., must be lifted before the ground freezes, and stored in a cool place. Tuberoses yet to bloom may be lifted and put into boxes of earth and placed in the greenhouse or a sunny window.

Straw and Leaves make an excellent covering to plants of doubtful hardiness. Such a protection will cause a stronger bloom in the spring and make the grounds look neater for raking up of the leaves.

Walks.—This is a good time to make or improve the walks. A thoroughly-made walk is a permanent improvement, and is the only kind that pays in the long run, to make anywhere on the ground.

Finally.—Do everything that in any way prepares for winter, or will aid in the busy spring.

Greenhouse and Window Plants.

The greenhouse before this should have been put in readiness, that there may be no delay in bringing in the plants when the time comes. Soil, labels, moss, pots, and all other needed articles should be on hand ready for use, and in sufficient quantity.

Bulbs for flowering in pots should be potted as soon as obtained; the soil should be rich, made loose with a plenty of clean sand, after which the pots and plants may be placed in a cool and dark cellar to form a good growth of roots.

Window Plants.—The necessity of a gradual change must be emphasized in removing plants from the open air to the dwelling rooms. It is best to place the plants in a room where there is no fire, and one that can be opened during the day. After a while the plants may be taken to the close living-room, in which there is a fire.

Hardy Plants can be forced in window culture, and deserve more attention than they have received. Among these are *Dicentra* (Bleeding Heart), *Astilbe Japonica*, Lily of the Valley. All such should be taken up at once and potted, and kept in a pit or cellar until late in January or February, or later; when brought out for bloom, they should at first receive water rather sparingly.

Seeds of Annuals may be sown; Candytuft, Sweet Alyssum, and Mignonette, and other pretty annuals, are always in demand for cut-flowers.

Hanging Baskets, made up with new plants, should be well watered and kept in the shade for a few days. Do not place them in the confined air of heated living-rooms until too cold to remain outside.

Bee Notes for October.

BY L. C. ROOT.

THE HONEY CROP.—The yield of honey from Basswood and other sources, in this section, has not equalled our expectations. During the last days of June the supply of honey, from basswood, promised to be abundant, but it was very suddenly and unexpectedly cut short. Reports from all parts of the United States indicate a small crop. We judge it to be less than one-half the usual average; many report an entire failure. In our own apiaries we secure over 15,000 pounds from 176 colonies. Thus far we have taken from the three selected swarms as follows: July 10th, No. 1, 77½ lbs., No. 2, 66½ lbs., No. 3, 83½ lbs.; July 13th, No. 1, 41 lbs., No. 2, 41 lbs., No. 3, 55 lbs.; July 19th, No. 1, 12 lbs., No. 2, 18 lbs., No. 3, 21 lbs. After the last date given we removed the swarms, with others, to where Buckwheat, Golden Rod, and Eupatorium are found in greater abundance than around the summer stands nearer home.

FALL PASTURAGE.—The subject of fall pasturage is of considerable importance, as with a fair yield of honey at this season, breeding will be continued, and thus one of the essentials for successful wintering is secured. It will therefore be found profitable to study the sources from which a yield may be expected. In many sections buckwheat is the chief dependence for late honey. In other localities, like our own in the Mohawk Valley, Melilot or Sweet Clover, shown in fig. 1, is of great importance. But more generally, we think that the supply will be gathered chiefly from Golden Rod, fig. 2, and Eupatorium, shown in fig. 3. These wild plants can be found upon rough waste land, in nearly all parts of the country.

Fig. 1.—MELILOT OR SWEET CLOVER.

FALL MANAGEMENT.—If surplus boxes have not been removed as directed last month, it should be attended to at once. If swarms have been supplied with extra combs for extracting, they should be removed and packed safely away for use another season. The value of these combs, as well as those taken from piece boxes, cannot

Fig. 2.—THE COMMON GOLDEN ROD.

be over-estimated, consequently great care should be taken to preserve them. Mice and rats should be carefully excluded. If disturbed by the destructive moth, the removed combs should be smoked with brimstone.

An error appear in Notes for September, which might mislead the uninformed. It should read, "the combs should be watched, and not, "the combs in the brood-nest should be watched." There is no danger of combs in the brood-nest of good swarms being injured by the moth, at this season, and if weak ones were disturbed, it would be necessary to examine them and remove the moth larvæ, as by smoking with brimstone, the brood of the bees would also be destroyed. When boxes and extra combs are removed, close all upward and downward ventilation, and if the entrance is too large, make it smaller. This will aid in keeping the hive warm, and facilitate continued breeding.

Fig. 3.—THE EUPATORIUM.

MARKETING HONEY.—In marketing honey use every precaution to make it neat and attractive. Directions for preparing and casing honey for market, will be found in the *American Agriculturist* for October, 1879.

QUESTIONS AND ANSWERS.

HANGING AND STANDING FRAMES.—"Do you not crush more bees, and are you not more liable to kill the queen with the Quinby standing frame, than with the hanging frame?"—We consider the standing frame quite as desirable, yet we, as well as others, in answering such questions, should not lose sight of the fact, that every bee-keeper becomes most familiar with whatever style of hive he adopts, and, naturally, can handle it better than any other, until he acquires a large experience.

OPENING HIVES.—"How often should a beginner open his hives?"—Just as often as practical operations require him to do so.

BEES IN A GARRET.—A correspondent in N. J. comes with the old question of the desirability of keeping bees in a garret. This story of arranging bees in a room in a garret where they will not swarm, and where the owner can go and cut out cards of honey for family use, at any time, is a very old one, and belongs with that other old story of the immense swarm of bees somewhere in the rocks, where bees pour forth in masses, and honey may

be found by the ton. As regards keeping bees in an attic or upper room, or even upon a roof, they may be so kept, if some practical hive is properly arranged in such a location. There are even some advantages derived, where but few hives are kept. But all things taken into consideration, it is preferable to have the bees placed somewhere near the ground.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Text-Book on Agriculture Wanted.

The impression is gaining ground among thoughtful persons, that children who are to become farmers should have a primary education that will fit them for their future occupation, as much as those who are to become merchants, bankers, etc., and that the public schools should teach the principles of agriculture as well as those of business life. In view of a probable demand for such a work, the Orange Judd Company offer **A Prize of One Hundred Dollars** for the manuscript of the best elementary work that will give children an idea of the principles underlying the practice of Agriculture that is suited to the United States. The work should be adapted to the capacities of children of the age of fifteen and over, and must not exceed 200 12mo. pages. The work should give the best practice in agriculture, and the reasons for the same so plainly that they may be understood by youth, without requiring a knowledge of chemistry, and, so far as possible, avoiding the use of technical language. Manuscripts should be designated by some name or mark, and be accompanied by the real name in a sealed envelope; they should be presented on or before January 31st, 1881. If, in the opinion of the Judges, none of the manuscripts offered are deserving of the reward, the offer will be renewed; the successful manuscript to be the property of the Orange Judd Co.

Reliable Business Men, those who have both the *ability* and the *intention* to do what they promise, are the *only* ones invited to use the business-pages of this journal, and those in charge of that department are under positive instructions to admit no others at any price; and they try to live up to it, and generally do, though once in a while they may make a mistake—to err is human—but *this* seldom occurs. We could make a fortune in a single year, and supply the paper at lower rates, if the advertising pages were thrown open to those who gladly pay high prices, as they can afford to, because they give little for much. But we mean our advertising pages shall be a valuable source of *trustworthy information* to our readers.—When ordering from, or corresponding with any of our advertisers, or sending for catalogues, etc., it is well to state that you are a reader of this Journal. They will know what we expect, and what you expect of them as to prompt and fair treatment.

The Fairs, Complimentary Tickets, etc.—One of the laws of Natural Philosophy is, that a body cannot be in two places at the same time, and with this law in action we are forced to decline a majority of the invitations. It is with regret that we realize the impossibility of attending many of these useful exhibitions, as we always feel well paid in old friendships renewed, information gained, etc. To all who have sent us premium lists, tickets, and extended other courtesies, we tender our hearty thanks, and hope that every fair, State, County, District, and Town, may be a perfect success. A list of the October Fairs is given on page 447.

Death of Albert J. Meyer.—Brigadier General A. J. Meyer, Chief Signal Officer United States Army, and widely and familiarly known as "Old Probabilities," died at Buffalo, August 24. While on duty as an assistant surgeon in the army on the Texan frontier, where a broad level plain and clear atmosphere offered superior facilities for signaling by vision, Dr. Meyer's attention was drawn to the possible advantages that might result from a system of night signals in army and even navy operations. As the result of his study and investigation he published in 1858 his "Manual of Signals for the United States Army and Navy." Dr. Meyer was soon appointed Chief Signal Officer (1860), and became actively engaged in developing a special signal service for the army. His service during the war was of great importance. An instance of this was the saving of Allatoona, Ga., in 1864, by bringing troops by signals in time to relieve the post, the message being sent over the heads of the surrounding enemy. After the war General Meyer was largely instrumental in establishing telegraphic communications with military posts on the frontier, 5,000 miles of telegraph lines having been built under his supervision. By act of Congress in the spring of 1870, he was charged with the important duty of developing a national system of meteorological observations, and the success of the system, which was developed with remarkable rapidity under his admirable management, has led to a uniform international system of simultaneous meteorological observations over a large part of the northern hemisphere. The work which "Old Probabilities" has so thoroughly pushed forward must be of lasting benefit to all classes of people, but to none more than to the farmers, who may well feel grateful to General Meyer for his services, and only wish he had been spared for a longer life of usefulness among his fellow men.

Charles L. Flint, Resigned.—Mr. Flint, who from the first has filled the position of Secretary of the Massachusetts State Board of Agriculture, has resigned, and Mr. John E. Russell, of Leicester, has been elected in his place. Mr. Flint has long been the main spring and balance wheel of Massachusetts agricultural work, and it is fitting that he should have rest from the routine of official work, which he has done with such credit to himself, the State, and all concerned in agriculture.

Windmills for Thrashing.—"O. V.," Montgomery County, Pa.—The very large windmills have power enough for thrashing, and when they are needed for other purposes on the farm might be used economically for this purpose, and are doubtless occasionally so used.

Advantages of Draining.—The intelligent farmer understands very well the importance of removing the excess of water from his soil. It makes the soil warmer; the sun's heat falling on a wet soil is used up in changing the water into vapor, and does not warm the plant as it otherwise would. Drainage allows a free access of air through the soil, an important condition of the best growth of agricultural plants. A longer season is also given—the drained land can often be worked considerably earlier in spring and also later in the fall.

Society for the Promotion of Agricultural Science.

During the meeting of the American Pomological Society, held at Rochester in 1879, a number of gentlemen met in consultation over the needs of better farming, and to devise means for extending the Science of Agriculture. "They recognized the need of an educated public sentiment in order to secure progress in agricultural pursuits, and were aware that the hope of agricultural progress was in enlisting the efforts and the sympathy of the intellectual classes." A preliminary association was formed, the prime object of which, as stated in the call, "shall be the promotion of Agriculture by fostering investigation in science applied to Agriculture."

At the recent meeting of the American Association for the Advancement of Science, in Boston, a number of the same gentlemen, with others specially interested in the promotion of Agriculture, met together, and, after deliberating upon the plans that had been proposed by various gentlemen, formed themselves into the "Society for the Promotion of Agricultural Science." The organization at present is a provisional one, and assumes much the nature of the "Entomological Club," in being made up largely of members of the A. A. A. S., and will meet on stated days in the same city, and at the same time as the American Association for the Advancement of Science. It is the intention of this new Society to limit its number to 40 or 50 members, and hopes it may make its influence felt, and in time come to be regarded as an authority in the field of Agriculture, as does the National Academy of Sciences in its special domain.

Among the members present were Prof. G. C. Caldwell, of Cornell University; Prof. M. C. Fernald, Maine State Agricultural College; Profs. R. C. Kedzie, W. J. Beal, and A. J. Cook, of Michigan Agricultural College; Dr. A. R. LeDoux, formerly in charge of the Agricultural Experiment Station, North Carolina; Dr. W. G. Farlow, of Harvard University; Dr. E. Lewis Sturtevant, and others. The new Society has the hearty co-operation of Profs. S. W. Johnson and W. H. Brewer, of Yale College; J. J. Thomas, Patrick Barry, L. B. Arnold, and other scientific men who have deep sympathies in advanced agriculture. Prof. W. J. Beal was chosen President, and Dr. E. Lewis Sturtevant, Secretary. These gentlemen, with Prof. G. C. Caldwell, form a committee to develop plans of work, etc. Assuming little, in a quiet, inobtrusive way, this small band of earnest workers may do much in the field of practical, progressive, and intellectual agriculture.

The Long Year.

Read This.—Fourteen Months.

All **New** *Subscribers for* 1881, *whose subscriptions come to hand during* **this month (October)**, *will receive the* ***American Agriculturist*** *for November and December of this year without extra charge.*

The above applies to **All** *new subscribers, from whatever source received—including Premium Clubs.*

Those too distant to receive this number before **October 31**, *will be allowed* 10 *days after its reception in due course of mail, to take advantage of the above in presenting the paper to their friends.*

The Premium List.

September Supplement.

The Supplement of last month's paper should be preserved for reference by all who received it, as a descriptive list of good Articles and choice Books, all useful. There is hardly a family in the whole country that does not desire and *need* one or more of these articles as a premium, or by purchase.

There is not a town or neighborhood in all the country where one or more persons of a little enterprise, may not secure one, two, or three of these excellent premium articles without money outlay, and at the same time confer a real benefit upon every person they shall gather into a premium list of subscribers, and readers. It only needs the will—the determination—to do it, and it will be accomplished.

THIS MONTH is a good time for the work. Remember *that all* new names for 1881, received in this month of October, are entered at once to receive the paper for November and December without extra charge. This applies to all new subscribers, including premium lists.

☞ **N. B.**—Premium lists containing two or more names, may be made up of both *new* subscribers, and *old* ones renewing for another year. For other particulars, see **Premium List** in Supplement of the September *American Agriculturist.* Any one not having received it, will be supplied on application.

Tenant Farming Again.

The able remarks about Tenant Farming in the August number of the *American Agriculturist* attracted my attention, and, as it so well accorded with my own views, I thought I would give you my ideas of the cause of failure of agreements between landlord and tenant. I am a tenant farmer, and I frequently hear intelligent people talking about the rescue of certain lands from the "careless hands of tenants." I also see occasional articles to the same effect; but, as you say, why have not these things a remedy? and if so, why has the remedy not been applied? There are many tenants, who have the right kind of landlords, that do succeed, and their landlords find a handsome return for all they invest on their farms; but I regret to say that such is not generally the case. The tenant system of farming in this country is generally defective, but that it is all the fault of the tenants is not true. No doubt there are careless tenants as well as careless men engaged in anything else, but an individual class should not shoulder all the blame, when the defect is from general causes. Tenant farmers are, as a rule, men of ordinary intelligence and moderate desires, and generally disposed to act fairly and honestly towards the owners of land, but when they find no disposition on the owners' part to help shoulder the burdens, they are apt to try and make it as light as possible for themselves, and where one landlord does not please, another is looked for. Therefore, to be brief, I would say that the root of the evil lies in *short leases*, when, under a better understanding, we might have our differences adjusted without changing landlords. The cause, I think, of short leases is generally a want of confidence in each other. Many owners of land get good tenants, but the reputed carelessness causes distrust, and that distrust often engenders selfishness. The tenant has but a short lease, and cannot afford to put on more than he expects to get off the land, for he may have to leave at the end of the year, and let some one else reap the benefit of his labor; whereas, had he the assurance of a longer tenure, he might go on improving, with proper assistance from the owner, from year to year, feeling that he was not only working for the benefit of the landlord, but that he was doing the best for himself at the same time. In changing, the landlord often gets a worse tenant, and the tenant a worse landlord, and both are dissatisfied.

I am on a small farm, and know I could do better on a larger one, but, because of the bad system of farming here, and more especially the bad tenant arrangements, I shall be careful how I change, as I might do worse. In this section the landlords do not like to do anything for their lands, except to be sure that the tenants sow and reap, and the tenants try to sow as little as possible for the owners' benefit. This is all wrong, and there is no real reason for it. Let the owners of land make up their minds to have longer leases and better tenants, and do what they ought for their lands, not expecting tenants to do all, and be assured that it will not be long before the discord and carelessness of to-day will be forgotten. I admit that the present state of affairs has gone on so long that, like all other evils, it will have to be gradually rooted out, as no arbitrary or forced measures would ever be able to eradicate it. "TENANT," Talbot Co., Md.

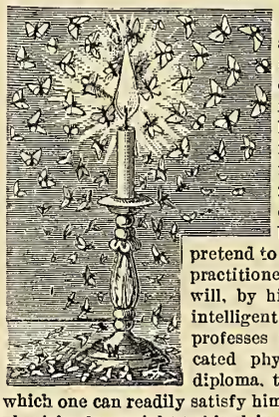
Spring and Fall Pigs.—Pigs littered in the fall or early winter, owing to the cold weather, lack of green food, etc., seldom make a good start, and in many cases are eaten so soon as dropped by their voracious dams. Pigs for the greatest profit should come about the opening of spring, with its fresh grass and warm sunshine; they can then be ready for the market by fall, and very few risks will be run. For this end sows should be bred in December or January. At one time large hogs were highly prized in the market, but now smaller ones are in demand, and such pork can be produced at less expense per pound than that of large hogs. Young hogs are the most profitable, born in spring and marketed in the fall.

White or Yellow Corn for Feeding.—"N. W. Y.," Hunterdon County, N. J. After studying all the analyses of corn we have access to, we cannot find that color is an indication of quality which can be depended upon at all. The Flint corns, however, have a slightly higher average value than the Dent corns.

Whey: How to Use It.—Whey is milk minus the cheese that has been removed. As cheese is the most highly nitrogenous portion of the milk, it follows that whey is comparatively weak in these important albuminous food elements. Milk being a perfect food, whey is a liquid lacking in nitrogen to make it complete as a food. In feeding whey to the best advantage this loss of nitrogen should be made good—as far as such a loss can be made good—by using some substance rich in the element in conjunction with the whey. This may be linseed meal, oatmeal, wheat middlings, or some such like substance. Whey thus supplemented will be found to be an excellent food for calves or pigs. For young pigs —shoats—such a mixture gives very excellent returns, the food seeming to furnish all the elements necessary for the best growth of the animal. The great objection to whey has come from feeding it alone, and especially when its sugar had turned to acid by long standing.

Apple Pudding.—"After what is said in March No., 1880, about apple dumplings, I would like to say, we make apple puddings that "grandmother appears to like as well as the dumplings she used to make," and *pater familias*, who is authority on this question, fears no consequent danger to the digestion, the only objection being the crust will allow of all the good cream you choose to put on it. I use a gallon milk pan similar to fig. 3, page 184 of *American Agriculturist* for May. It should be heated gradually and a little ashes put on the stove to prevent breaking. Work some good butter in sufficient light dough (yeast bread, no lard or soda) to make a cake nearly as large as the pan, and one inch thick. Set it where it will rise. Fill the pan half full of apples, pared and cut in eighths. Add water to cook them and set on the stove. Lay over them the cake, which should be quite light and gashed. Cover tightly. If the apples cook quickly it will be done in half an hour. Turn quickly on a large plate—sugar and cream." *

Sundry Humbugs.



Medical matters have always formed a large share of the contents of our humbug column, for the reason that we look upon fraud in medicine, as one of the most pernicious. Among the most dangerous of medical humbugs, are those who pretend to be regularly educated practitioners. The absolute quack will, by his pretensions, disgust intelligent persons, but where one professes to be a regularly educated physician, and to have a diploma, there is no method by which one can readily satisfy himself that the so-called physician has a right to his claims. It is unfortunately the fact, that a number of persons who have attended medical lectures and have, perhaps, even graduated, should, failing to become established as regular physicians, fall into the practice and way of quacks and become venders of nostrums and practitioners of some *Pathy* or other. These persons have a regular issued diploma, and we have at present no law which can deprive them of it. Besides these, there is another class who have diplomas, who have not gone through the trouble of studying or even attending lectures. For a long time it has been known that medical diplomas could be purchased for a moderate sum. In Europe it is vastly more difficult for one to obtain a medical diploma, than it is in this country, and the fact that an American diploma will allow one to practice in Europe has given encouragement to this sale of false diplomas. In this country one can, in most medical colleges, procure a diploma after two years of study, but this is not the case in Europe. Five years at the least, are required, and the examinations there are vastly more severe than in our colleges. In view of the higher standing of physicians in Europe, and the greater difficulty in becoming qualified to practice, many pretenders there have availed themselves of the opportunity to purchase diplomas which have been offered by a pretended medical college in Philadelphia. The Philadelphia newspapers, especially the "Record," which deserves a great deal of credit, have taken the matter in hand, and fully investigated the sale of bogus medical diplomas. It was found that a young man with sufficient money, could be made a full-fledged doctor and receive his diploma with as much Latin in it as in a regular one, in about twenty-four hours. It appears that one Buchanan was the chief operator in this diploma mill. He had associates, but they appear to have played a subordinate part. After much investigation and accumulation of evidence, this Doctor Buchanan was arrested, but before his case came to trial he is supposed to have committed suicide by jumping from a steamer. But even in his death (?) as in life, he practised deceit, for now it appears that Dr. Buchanan did not kill himself, nor did any one commit suicide, but an expert swimmer, hired for the purpose of representing Dr. Buchanan, pretended to destroy himself. It is estimated that thousands of these diplomas have been sold, each serving as a black flag to some piratical chap who is preying upon the health and pockets of the community.

While it is gratifying to know that this diploma mill has been closed, the fact that it could have gone on successfully for so long a time, shows that our laws in such matters are not so strict as they should be. Indeed the sale of false diplomas might have continued for a long time to come, had not the number of American diplomas, in possession of foreigners, aroused the attention of European authorities and the matter was made a subject of complaint to our Ministers abroad who communicated the facts to our own government. It would be better for the health of the community were the laws regulating the practice of medicine and the sale of drugs vastly more stringent than they are at present. Indeed in some States there can scarcely be said to be any laws on the subject. While the possession of a diploma is not absolute evidence of skill on the part of its possessor, yet it shows that the holder has had opportunities to qualify himself to practice medicine; while the possession of one of these bogus documents merely shows that a man had money enough to purchase it.

HUMBUG LAWYERS.

There are some lawyers who are in very small business, and we would suggest to one in particular who is engaged in writing threatening letters in behalf of a quack medicine vender, that he must be careful not to write anything that he wouldn't like to see in print. We do not know that we can prevent his writing such letters, but we can shame him out of it by publishing some of them. He had better take this as a warning.

GAMBLING IN WHEAT.

Since the closing up of the swindling stock broker establishments, other ways of speculation appear to have been found. The desire to engage in a game of chance (the spirit of gambling) appears to be more general than people are aware of. Lotteries, though positively forbidden by law, flourish in all our cities, there being a large portion of the community who are not only not opposed to them, but who participate and take the chances in them. Indeed it seems very difficult to control this matter by law, there being so many ways to evade what appears to be very strict legislation. In a New England town a local law was very strict for the suppression of gambling of all kinds. The various games by which the people had been accustomed to gamble, being enumerated in the law. It was supposed that every known game was prohibited, but one day two men were seen at a table each with a dollar bill in front of him, and upon each bill was a lump of sugar. The owner of the lump of sugar upon which a fly first lighted, won the game and took both bills.

When stock gambling was suppressed, other methods of speculation appeared. Operators, even if not the same, evidently of the same class as the "Put and Call" brokers, are now sending their circulars over the country giving people an opportunity to bet upon the price of cotton and of grain and other commodities.

Look out for the New York Seed Company, a name taken by one of these speculating concerns. They send out blanks which allow one to bet upon the price of wheat at some future day. One of our friends who received a blank of this kind, writes to us in astonishment that the parties do not state what variety of wheat the Seed Company propose to deal in. There is no danger that any one will get taken in by these wheat and cotton speculators, who does not really desire to gamble in this manner.

PEDDLING CLOCKS.

The business of peddling clocks did not die out with Sam Slick. Clock peddlers are said to be especially numerous in some of the Southern States. One of Sam Slick's methods was to ask to be allowed to leave a clock until he came that way again. Sam had an acute knowledge of human nature; he knew that if persons once became accustomed to the clock, they would not readily part with it, and whenever he received permission to leave a clock, he was very sure that he had made a sale. When he came around after a few months, it was very rare indeed that he would be allowed to take the clock away.

The clock peddlers of the present day, however, leave the clock, but at the same time take a note for two or three times the real worth of the time-piece. Trouble has already come from some of these clock trades, especially in States in which the law on the collection of notes is very stringent. Those who follow our repeated advice, to give no note whatever to an unknown person for any article whatever, or under any possible circumstances, will avoid all difficulty. One can now buy a good clock very cheaply, and there is no need of purchasing one that cost more than a few dollars, or more than can be readily paid for at once.

VETERINARY QUACKERY.

There is not only quackery in regular medicine, but also in the treatment of animals. One of our subscribers sends us a circular which purports to come from the Veterinary University of Medicine in New York City. There is no such university in New York City and the so-called Professor is very careful not to give the street upon which that remarkable institution is located. The title shows ignorance in the use of language, and his circular indicates that the "Professor" and English gram-

mar are not on very intimate terms. The "Professor's" circular is ornamentcd by what we takc to be his portrait, and it also has, as a trade mark, a pig with a very lively curl to his tail.

Regular veterinary praetitioners, as well as other practitioners, do not advertise proprietary or secret medicines of any kind, nor do they avoid giving their location. At the bottom of this circular we read "Patented June 11th, 1878." What is patented, whether the portrait of the "Professor," or the circnlar, or the curl in the tail of the trade mark, we are unahle to state; hut it is a very pretty circular.

VALUABLE REAL ESTATE.

What is the use of having a gold mine while common dirt will bring $10 a pound. This is Real Estate worth having—worth more than corner lots even. But this valuable soil is away off in Brazoric County, Texas. The writer has been through Brazoric County, but he was not aware of the value of the earth upon which he trod. This earth is not thus valnable for bnilaing upon, but it is claimed to be a sure cure for scrofnla, neuralgia, and all the rest of it. This eartb does not appear to be applied after the manner of the true mud cure, in which the patient is plunged up to his ears and left to soak; it is too valuable to he used in that way, but you take only a small spoonful of it and put it in a pint of water, and let it soak for ten honrs, and then you take a teaspoonful three times a day and—it will do you just as much good as if you hadn't taken it. There can be no doubt that the fellow who offers it for sale makes a pretty good thing of it. He knew hnman nature well enough to put the earth at a good price; had it been $10 a cart-load, who would have cared to have takcn it in teaspoonful doses? It secms there can hardly be anything so absurd but it will find people to take and believe in it. We always did have a good opinion of Texas, and now that we know that at least a portion of it is worth $10 a pound, we think more than ever of that beautifnl State.

PLANT PEDDLERS OR NURSERY AGENTS.

With the antumn days come the Plant Peddler or Nursery Agent. One of these fellows with a glib tongue, a fast horse, or a highly varnisbed bnggy, comes into a town, takes perhaps hundreds of dollars' worth of orders, and after he has done all the mischief he can, some good person will sit down and write us about it, asking if such a man is likely to do what he professes, and various other questions that would be very properly put hefore the orders had been given; but after the Agent has taken the orders it will be a very difficult matter for them to refnse to take the goods. However rascally snch a man may be, it is hardly possible to prove it until the trees and plants come into bearing, and here is where these chaps have the advantage. They cannot be found out in most cases under several years, by which time they will have gone to some far off State and will be beyond reach. A little common sense would be a very convenient thing to have to nse in these cases. If a man claims to be an agent of such and such a nursery, he will have proper credentials, and, if he is honest, he will be willing to substantiate his claims. If, however, he has no credentials it is very unwise to order of such a man, unless it is known that the trees, etc., will come from a nursery of good reputation; and it is very easy to ascertain this by writing to the nursery and making inquiry.

But why the majority of those who buy of such persons do not deal directly with the nursery, is a matter that we are quite unable to understand. If trees are ordered from a well-known nnrsery, and in the course of time proved to be not true to their names, one knows where to look for redress. Accidents may occur in even the best nurseries, and an honorable business man would make all the reparation possible should it be found that in fact trees were not as represented. These travelling chaps sometimes profess to sell fruits which have no real existence, or they describe well-known fruits in a manner which the facts will not warrant.

RUSSIAN APPLES.

For example, from Arkansas a man has been selling Russian Apples, claiming that they are imported from Russia and are better than others in every respect. Now there are Russian apples, and in far Northern localities some of them have proved of great value. As a general thing they are small and in some cases are not of bigh quality. But they are a great deal better than no apples, and our advice is always to plant the best that the climate will bring to perfection. Now, in Arkansas they have no more need of Russian apples than they have of snow-shoes, because these apples have no quality that make them especially desirable in a climate so mild as that of Arkansas. Then the agent had the Monarch of the West strawberry, which he describes as being unlike others, standing upright and the fruit never getting on the ground; all of which is simply nonsense. The Monarch of the West in some localities is a very good fruit, and in others a rather indifferent one; but it don't stand up bigh, and it does get on the ground. It seems that this man sold his stock much higher than it is quoted in the nursery catalogues. It may be well, as those who bought of him are learning a valuable lesson, that they should pay something for their schooling. Our Arkansas correspondent winds up his letter with "Do you think he is a humbug?" Most decidedly we do.

How to Dispose of Raw Bones.—"J. H. J.," Mason County, Mich.—When bones can he ground of course they are made rapidly available as plant food, but at a distance of four miles they may gradually be made useful thus: Sledge up the bones as much as you can, and mix them with good active horse manure, two-thirds manure and one-third bones. The pile should then be covered with three or four inches of earth. It will heat, and when the heat has subsided the bones will be found very much softer. Shovel it over, throw out the big bones, and all that will break up, hammer again and compost them still further. Make a fresh pile of bones and manure, and throw in the hard cases of the former heap. Thus the bones will gradually yield to the ameliorating and persuasive influences of the compost heap. The outside layer of earth will prevent loss of ammonia during the fermentation of the heap.

Tomatoes in Glass Jars.—"R. T. R.," Henry Co., Ind., writes: "I cook the tomatoes until the froth, which always rises when they first come to a boil, disappears, or about as much as if getting ready for table; then put them in glass jars like any other fruit—taking care to have the month of the jar perfectly dry, and the sealing wax not too brittle. Much of the sealing wax sold in sticks ready for use, needs a little beeswax melted with it, otherwise, when cold, it does not adhere to the jar, and the failure of fruit to keep is laid to other causes."

Nutriment in Fruit.—The mind grasps values by comparison. The chemist tells us that an egg weighing an ounce and a half is equivalent in food material to 17 ounces of cherries, or 22 oz. of grapes, 30 oz. of strawberries, 40 oz. of apples, 64 oz. of pears. We thus see that fruits are not very solid food. But we do not think any the less of cherries, apples, and pears, because they are not as concentrated in nutritive elements as the egg. They are no less a part of the best food of the human race, and most persons will continue to eat them.

Crystals of Sugar.—"E. C.," a subscriber in British Honduras, sends, by the hand of a friend, a sample of beautiful clear sugar crystals or "rock candy." "Not," as he says, "such as we usually make. They were taken from a tin of sugar which was run off for syrup from a pan before it came to the point when we make sugar." Any moderately strong solution of sugar—or syrup—will thus crystalize on cooling and standing. The slower the crystallization goes on the larger and clearer will be the crystals. This is an old process for obtaining refined sugar of the highest purity.

Sowing Oats with Wheat.—The theory is that when wheat is sown late, and not likely to make a stand sufficient to protect a light soil from wind and washing, a few oats—say a bushel or a bushel and a half to the acre—sown with it, by starting quicker and making more growth, will form a covering to the soil, which will hold the snow, prevent blowing and injurious washing, and die in the course of the winter and then form a useful mulch and manure for the wheat. Mr. O. Voightlander, of Montgomery County, Pa., kindly reminds us that on such soil as his, a clay or clay loam, the growth of the oats may be so rampant as to smother the wheat. This we do not doubt, and wheat on such land would be least likely to be benefited by the oats.

Confining Blackberry Roots.—Miss "G.," Riley County, Kan. Such a cement wall as you make for a cistern, three feet deep, will keep your blackberry roots thoroughly within bounds, unless the wall is torn to pieces by the frost. This may probably be prevented by clearing away the earth on each side of the wall and laying boards a foot wide on each side, edgeways, alongside the wall and in contact with it, the upper edges of the boards being put below the surface of the ground. The boards will be moved and the wall remain firm.

Jerusalem Artichokes for Cows.—"C. S.," Tuckerton, Pa., writes that an acre of Jerusalem Artichokes with an average yield of 1,200 bushels will afford enough nourishment to sustain two cows, and with less labor than is employed in raising an acre of potatoes. "Pound for pound, they are equal in nutritive qualities to potatoes .. Since these roots do not keep over summer, and as the cow will not thrive on them alone, it is necessary to supplement them with dry fodder during winter and to subsist her on other forage during summer. With the aid of this plant, three-quarters of an acre of land under high cultivation will nourish a cow during the whole year, and the soil will become rich without any other manure than that derived from the cow."—The roots of the artichoke should be planted in bills, three feet apart each way, and cultivated frequently to keep the soil in good tilth and free from weeds. A tuber, or piece of tuber the size of a hen's egg, is sufficient for each hill, it being covered two or three inches. The plants will grow until frost kills the stalks. When fresh the whole plant, root, stalk, and leaves, may be fed to the cow. In winter she will need about a bushel of the raw tubers a day, with eight or ten pounds of hay. Artichokes can be fed from the 1st of October to the beginning of June, during which time 250 bushels will be consumed by each cow, together with about a ton of hay. "A good way to keep Jerusalem Artichokes in winter is to place them on the ground in the field in shallow layers, covering them lightly with the stalks of the artichoke or with straw, and then with a little earth. If the rain wets them it will not injure them."

What to Do with Apple Pomace.—The best disposition to be made of the pomace from a cider press is to encourage its decay as rapidly as possible, by adding it in thin layers to a compost heap; placing it in immediate contact with either animal manure, lime, or ashes. It may he utilized, or at least disposed of with some prospect of its being useful, by knocking it into pieces and shoveling it, a hundred weight at a time, into the pigsty. Thus it disappears and is returned to the earth for all it is worth—which is not a great deal.

Swamp Muck.—"W. L.," of Essex County, N. Y., writes: "I have read the article on 'Swamp Muck—Its Value,' on page 340 of September No. of the *American Agriculturist*. I have a three-acre bed of muck, six to ten feet in depth. Averaging it eight feet, and calling twenty-seven cubic feet a load, it figures up 38,352 loads. This muck is pronounced superior to any known in Essex County. This is the starting point. Now, I have already in my barn-yard some twenty-five loads. I have drawn out and piled up about 180 loads. I have a seven-acre meadow that is to be turned over for corn next year. I have this muck, and at my command lime, salt, ashes, and plaster. What is the combination to be made?"—As soon as the muck is reasonably dry lay a mass of it about a foot deep, six feet wide, and as long as you please upon a dry and convenient place. Cover this with lime slaked with strong brine, to a dry powder, using enough to make the entire mass perfectly white. Cover this with four to six inches of muck, which lime again in the same way, and so on—each layer will be narrower than the first, so that it will hold its form. Thus, when three feet high, it will be about three feet wide on the top. The rain will not hurt it. It should be examined after about a month and worked over, making a new heap as close as possible to the first, and adding more or less lime in the same manner as before. Such muck will be in excellent shape in March or April to apply directly to the land, or to compost again with animal manure or anything of a fermenting nature, and will, when this undergoes heating in the spring, be excellent for manuring corn in the hill.

Weeds.—"If weeds are left exposed in piles a year, will their seeds germinate?" asks a correspondent.—Certainly; and some of them probably after ten years, if there were ripe seeds in the pile to start with.

Composting is the art of mixing organic matter, such as straw, muck, dead animals, etc., that must undergo decomposition before they become available as plant food, with inorganic matter that will absorb and retain the valuable gases that the organic matter would otherwise let pass into the air and thus be lost. Such a mixture must be kept moist, but not exposed to rains that would wash away the valuable soluble salts. Stable manure and muck make an excellent basis for a compost heap, with which ashes, leached and fresh lime, weeds (not in seed), waste matters, etc., can be mixed.

Cochineal in Florida.—The Cochineal Insect, a sort of plant louse, which abounds on certain species of cacti, and with the bodies of which a beautiful scarlet dye is made, and from which carmine is extracted, is said to do well in Southern Florida, though its native country is Mexico and the Northern States of South America. This being a fact, as stated by a Florida paper, it would seem worth while for enterprising people in Southern Florida to look into this matter.

Plant Economy.—Plants, like animals, can live on inferior food, but where it is abundant will select the best. Where food is lacking in quantity plants will contract their growth and devote all the food that is possible to the production of the offspring—the seed. It is a well known fact that anything which checks the growth of the plant tends to make it flower first, and if possible produce seed. It seems as if the plant realizes that its own life is in danger and takes the shortest cut to the reproduction of its kind; and in so doing often pinches itself and is very economical for the sake of future generations.

Dr. Geerge Thurber, so long and widely known in connection with the editorial management of this Jonrnal, and Dr. Manly Miles, in charge of the extensive *American Agriculturist's* Experimental Farm, sailed for Europe, Sept. 2d. These gentlemen are to visit the various Experimental Stations in Germany, France, and England, and will likewise devote time and attention to other places of special importance to all interested in progressive agriculture. Our readers will he fortunate in having the full results of their extensive observations and researehes in the futurc numbers of the *Agriculturist.*

The American Institute Fair is one of the "institutions" of New York City. "New Yorkers" think a great deal of it. They take their families, and their country cousins, and they do what they can to make it worthy of the "Empire State," and of the business "Metropolis" of this Yankee Nation. The Fair was nominally opened on the 15th of last month, and by the first of Octoher it will be in its full glory. The exhihition will he a very attractive one, and it will be a pleasant object to have in view for persons or parties coming to town hefore the close, which is on the 27th of Novemher.

Roup: What Is It?—The disease of fowls, and especially young fowls, called Roup, is most prevalent during the late fall and early winter months, and has its origin in colds which the hirds contract at this time. If not attended to the cold increases, the head swells, and a watery snbstance is discharged from the eyes, which in time may coat over and close them. The roof of the mouth and the tongue are similarly affected. As soon as the fowl is seen to be troubled with a cold, it should be given some meal mixed with Castor Oil, and its head bathed with a weak solution of Carholic Acid—a few drops of the acid in a basin of water. If the disease is already somewhat advanced, a pill of Sulphur and Cream of Tartar (equal parts) should he given. The sick hirds should he put by themselves and their throats and heads hathed frequently in a solution of Chlorate of Potash. The "ounce of prevention" that is worth so much is good management—good clean coops, roosts, fresh air, and pure watcr and food.

Pampas Grass Plumes.—Thcse plumes, somc fine specimens of which have been sent us from Florida, are the ripened flower clusters of the *Gynerium argenteum* (a native of South America), a grass which grows in the South, and also to perfection in California. Nothing is nicer for room decoration than a fine cluster of these soft plumes, silky and white, twenty inches to two feet in length. They can be found in seed stores often colored blue, green, yellow, red, etc., hut the natural snbdned color is most pleasing to many.

Lice on Stock.—A number of letters ask for remedies for lousy stock. Vermin of some kind very frequently infest domestic animals; they are mostly of the louse type: small parasitic animals that must be removed hy the application of some insecticide. A number of snhstances have been used to a greater or less extent, of which a few are mentioned below: One pound of Tobacco and six ounces of Borax boiled in two quarts of Water, to which Soft Soap enough is added to make a thick paste, has proved a good vermin salve. A mixture of Carbolic Acid and Soft Soap in the proportion of one to four makes a compound easy to apply, and very effectual. Shortly after, the parts to which the soap mixture has heen applied should be washed with pure water and a nondrying oil rubhed on. Oil of Turpentine and Lard Oil, eqnal parts, with a little Carholic Acid, is perhaps the most convenient mixture to make, and effectual in its application. Animals that are affected with vermin need hetter care and higher feeding in order to overcome the drain that those parasites make upon the system.

Quality vs. Quantity.—It begins to look as if we had reached that point when *quality* in the products of the farm, orchard, and garden, is to take the front rank, and quantity become a second consideration. It is not so much the large strawherry or squash, or the nnmher of qnarts of milk, as the flavor, the richness, etc., that is heing sought. This is encouraging.

English Emigrant Colonies.—Three years ago some gentlemen in Boston formed a Board for the encouragement of emigration from the populous centers of Europe to the fertile unoccupied lands in the West and South. Members of this hoard made a number of excursions to the Western States, in 1878, and finally selected a tract of land on the Cumherland Plateau in Tennessee. At the same time an English Board, organized for a similar purpose, was also making inqniries, and soon the Boston Board and the English Board were amalgamated; the English hecoming the leading spirit in the enterprise. From the time of the selection of the 400,000 acres, in Tennessee, two years ago, until now the work of the colossal enterprise has been necessarily slow. Mr. Thos. Hughes, the celehrated English writer, and familiarly known author of "Tom Brown's School Days at Rugby," is now in this country in the interest of this colonization scheme in Tennessee. The scheme can he viewed only as an experiment at present—the method proposed seems the best one for meeting many of the great difficulties with which agricultural life is generally associated in a new country. A hundred families purchase a fine tract of land at a low price. They unite in their numhers old and young of both sexes, persons of various trades and accomplishments, and begin work on the frontier, with many of the comforts of civilized life, the church, school, social gatherings, etc. Colonization of this kind will succeed, provided there is a strong hond of sympathy which holds the associated life together as a unit. A religion in common effected this in the Puritan colonies; and the Moravians are united in settlements all over the world, by ties that have all the indications of heing enduring. If no bond of unity survives the passage of the sea, disappointed ones will soon begin to drop away, and the colony will hreak to pieces, hut with the feeling that they can be more prosperous and happier together than separated, it will survive until the people are thoroughly naturalized, and the colony will continually increase hy fresh immigration. The situation in Tennessee is well chosen, being attractive hoth as to climate and soil. We wish them every success, and hope soon to have a full and encouraging report from Mr. Hughes of his work.

(*Basket Items continued on page* 445.)

The Guinea Grass, "Johnson Grass," Etc.

(*Sorghum halepense.*)

BY HERBERT POST.

I send you herewith an account of the "Johnson Grass" which is attracting the attention of farmers in various parts of the United States. It is not, as many are led to believe, a new grass, but it is only of late years that its value has been known or acknowledged. I have for five years past been cutting it and shipping as hay, and experience more than confirms the first expectations I had of its value. In the markets where it is sold it is preferred to the best Timothy hay, being more succulent and nutritious. The most reliable history I can obtain is as follows: In 1835, Governor Means, of South Carolina, obtained from Turkey some seeds of a grass, there known as "Guinea Grass." After growing it on his plantation it became known as "Means' Grass," by which it is still called in that State.

About 1845 William Johnson, of this place, being in South Carolina, obtained some of the "Means Grass" seed and sowed it upon his farm, where it now grows with great luxuriance. Here it obtained the name of "Johnson Grass," by which it is now most commonly known. It is a member of the Sorghum group, as its botanical name—*Sorghum halepense*—indicates. It is perennial, and propagated from both seeds and roots, the latter very much resemble those of the sugar cane; is very nutritious and eagerly sought after by stock of all kinds. It starts early in the spring and continues growing until frost kills it. In consequence of the deep penetrating roots, it withstands the drouth better than any of the other grasses, remaining green when other kinds are burned out by the hot weather. The richest bottom lands yield from one to two and a-half tons per acre at each cutting, and is cut two or three times each year. With the attention given to fertilizing in the Northern States, I doubt not its yield could be increased 50 per cent. per annum. For stock not at work it furnishes abundant food in grazing. Mr. N. B. Moore, of Augusta, Ga., after a trial of the various grasses for forty years, selected this grass as the best he could find. He planted one hundred acres of it, which yielded him a handsome income annually (Howard says $7,000 to $10,000). People who know the value of grasses no doubt wonder why this grass has not been more generally raised if so valuable. The simple reasou is, Southern people have from time immemorial been taught to destroy grass; and every thing else that interferes with cotton must give way. While a grass possessing great tenacity, it is easily destroyed by plowing up and exposing its roots to the hot suns of August and September.

One bushel to the acre will give a good seeding. Sown in September or October, it will produce two good cuttings the following year. It is also sown in the spring, but of course does not get as good a start. In the North the spring would probably be the best time to sow. It should be sown the same as other grass seeds, and brushed in or covered with a roller.

[This grass was described and illustrated in the *American Agriculturist* for March, 1877, in which it was stated that the Guinea Grass is found in Southern Europe, East Indies, Cape of Good Hope, West Indies, Australia, and Brazil. In September, 1879, this same grass was again treated under the name "The West India Green Valley Grass," with which the seed of the *Sorghum halepense* was advertised for sale through the Northern States.—EDS.]

Preparing and Seeding Ground for Meadow.

The practice of sowing grass and clover alone without any so-called foster crop is becoming general. It is found that the supposed nursing crop has quite a different effect from fostering or encouraging the tender grass, but chiefly robs and destroys it, unless the soil is unusually rich. The more successful practice is to prepare the soil by thorough plowing—rolling if necessary, and harrowing so as to procure a fine tilth, and sow the seed early in the spring, without any accompanying crop. The preparation of the soil in the spring is completed by a dressing of fine manure, and a thorough harrowing, a shallow plowing being given if necessary. Harrowing will be sufficient in the majority of cases. After a fine harrowing the seed is sown. A mixture will be found most satisfactory. Mixed crops, as a rule, yield in proportion to the increase of seed. Thus a usual seeding of Timothy or Clover, or both, will give a certain quantity of hay; if Orchard-Grass is added, a crop of hay will be taken equal in amount to that expected from the Timothy or Clover, but two or three weeks earlier. A second crop may be taken later, of which the Timothy will furnish the bulk, and the Orchard-Grass will fill up the bottom. If Kentucky Blue Grass is added, or Rhode Island Bent, a later crop will be given, which can be mowed for rowen, or will give the best of fall pasture without injury to the roots of the Timothy or Orchard-Grass. The mixture here indicated is one that may be suggested for trial. It has been tried and found successful and desirable in all cases, and deserves a more extended application. The seed has been sown in the following proportions: One bushel of Orchard-Grass, one-half bushel of Kentucky Blue Grass, one-half bushel of Rhode Island Bent, ten pounds of Timothy, and six pounds of Red Clover. The Blue Grass appears later than the others, and fills up the vacant spaces left by the failing clover, which disappears after the second year. The advantage of the mixture is chiefly that a fine thick bottom is produced, which covers and protects the ground between the stools of the coarser grasses, and which furnishes a second crop for hay and a third for pasture. For soiling purposes the mixed seeding is even more useful than for pasturage, as the grass may be cut at any season without danger of injury from a dry spell. These particulars are more pertinent for the spring than the present season, yet if one would avail himself of them he must make preparation now, and not delay.

The Chinch-Bug in Winter.—Professor Cyrus Thomas, of the United States Entomological Commission, has made an exhaustive report upon the Chinch-bug, which gives some useful facts concerning its winter habits. Insects may pass the winter either in the egg, the "worm" or larva, the pupa, or as the full-grown, perfect insect. The chinch-bug adopts the last as its winter state. "When cold weather comes on those of the fall brood leave the now dry and hardened corn-stalks, and seek secure places in which to remain during the winter. Occasionally they take flight at the time, but usually they seek the most secure places which can be found in and immediately around the field. Any rubbish left in the field, if of a nature to meet their wants, is eagerly sought; corn shocks, straw piles, stumps, logs, and fence rows are used as hiding-places; they even conceal beneath the

clods when no better places can be found." Many go into the forest and along the bush-bordered streams. "During the winter they remain in a torpid or semi-torpid state, but are easily warmed into life and activity. As the cold weather becomes more and more severe they press deeper and deeper, if possible, into the recesses of their hiding-places. They prefer dry quarters if readily obtained."

There are two broods of this injurious insect during the season. The perfect insect comes forth in spring (March to May), deposits its eggs, which soon hatch and pass through the stages of development, to in turn lay their eggs, which produce the fall brood to hibernate until spring again.

Weeds: Two Troublesome Daisies.

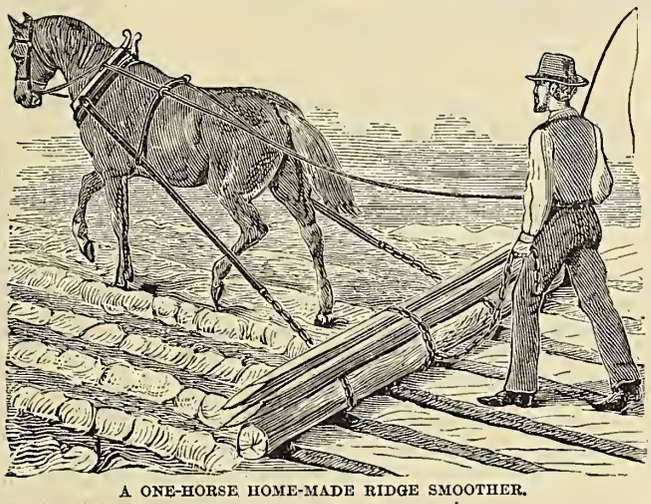
The Ox-Eye Daisy (*Leucanthemum vulgare*) and the Small White Daisy (*Erigeron strigosum*) are troublesome weeds. These plants, known by different popular names, are somewhat similar, the latter, however, having smaller flowers, and being annual or biennial, while the former has much larger flowers and is a perennial. The Ox-Eye Daisy is, therefore, the most difficult to get rid of, as cutting before the seed is ripe is not sufficient. These weeds are rapidly spreading over the whole country, and scarcely a farm is to be found free from them. They are mown with the hay, and the seeds are thus carried far and wide to new fields and fresh pastures. When Timothy is cut for seed these weeds are gathered with it and thus too the seed is sown in new places. Something should be done to destroy these pests. Early mowing of the meadows will destroy the small daisy, as the root will die the second year at least; but the Ox-Eye Daisy, as it is perennial, cannot thus be killed out. This can only be done by cultivation, and care to avoid using hay from infested fields, or foul grass seed. To cut the weed after the blossoms have formed, in the hope of preventing the seeds from ripening, will be futile. The seed will mature after the plant is cut, if the flower has been fully expanded, and hay that has been mown early to escape mixing of the seed of the daisy, will, after all, be infested. The plan most likely to be successful, is, to seed down with a mixture of Orchard-Grass and Clover; this is ready to cut in May or June before the daisies have prepared to blossom, and the flower stalks being cut off, a new growth must be made. This will frequently happen, however, but as a second cutting is usually made of the Orchard-Grass, this may still be taken before the second growth of the daisies can show itself in flower. In this way these weeds, of both kinds, may be brought into subjection. Otherwise a succession of cultivated crops for three or four years, should be grown, and every daisy that escapes the cultivator should be pulled. It may be thought that this is too laborious and expensive to pay. But the loss sustained year after year, and the damage done to the meadows and pastures by these weeds is considerable, enough to warrant some expense and a good deal of labor to eradicate them. A farm cannot be kept clear of them, if hay or seed is brought from land that is infested. Buy only pure hay and clean seed.

A Ridge Smoother.

A correspondent who raises every year a good many roots, and whose practice has been to manure in the drill and cover with the plow, by ridging up over the manure and sowing the seed upon the ridges, first flattening them by a light roller, writes to the *American Agriculturist* that he has, or thinks he has, found a better way.

The roller was out of order and so he attached the trace chains, about six feet apart, to a 12-foot stick about 6 to 8 inches in diameter, in the way shown in the accompanying engraving. When fastened so wide apart the draft is much steadier than if attached nearer together. The stick not being quite heavy enough, he added two fence rails, fastening them on by a chain near the middle. A bundle of four or five fence rails would doubtless do equally well. The weight of the smoother should depend upon the hight of the ridges and the stiffness of the soil. The laborer carries the end of the middle chain in his hand, and with it guides the smoother, or lifts it if it becomes clogged or drags along weeds or sods. In turning also at the end of the drills, he lifts the implement by pulling back upon the chain. The action is very different from that of a roller; instead of flattening it smooths, and if sods or stones lay upon the ridges they are shoved off and not crowded into the drill, to be in the way of the seed sower.

For the best use of such a smoother, the land should be reasonably clear of large stones. It has one decided advantage over the roller, in that



A ONE-HORSE HOME-MADE RIDGE SMOOTHER.

grass sods, and many weeds, are not pressed and settled into the ground, to start up at the first rain, but are swept off into the hollows between the ridges, where they do little harm and the cultivator will strike them the first time it is used.

Yellows in Peaches.

From the number and character of the letters that are coming to us, it is evident that, in some regions, this has been a very destructive year to the peach trees on account of the prevalence of the "yellows." A communication now before us is from "E. H. C.," St. Joe, Michigan, in which it says: "This vicinity has been a great peach region. The 'yellows' began here about ten years ago, and has swept every tree from existence. It is now claimed that the business (of peach-growing) is being restored in New Jersey, where the 'yellows' prevailed a few years since. It is the topic for discussion at our next meeting," etc.

A recent letter from one of the leading peach-growers in Delaware, informs us that there has not been much trouble in that section from the "yellows" for a number of years. But what is the "yellows?" This question is so frequently asked, that we wish it could be answered beyond a shadow of doubt. The "yellows" has been claimed by some to be of fungus origin, while others class it among those deranged states of plants not caused, as far as is known, by either fungi or insects. In order to find out more concerning the nature of this destructive disease, we have spent considerable time in examining the diseased parts with the compound microscope. In this examination, which included all parts of affected trees; the leaf, stem, fruit, root, etc., no traces of fungus could be found. This, of course, is by no means conclusive that the trouble is not caused by fungus, but it leads one to believe that if the "yellows" is caused by a fungus, it is probably one of those minute kinds like that of the yeast plant. Recent investigations upon the Pear Blight indicate that it may be caused by a fungus so small as to require the higher powers of the microscope to see it—that it can be artificially propagated on healthy pear trees by a process of inoculation, etc. It may be that the "yellows" comes in the same category. It is certainly contagious, as has been proven beyond a doubt, and though not so sudden in its action as the Pear Blight, is, as many in the Michigan Peach Belt and other localities can testify, as destructive in the end.

Our Apples in Sweden.

Dr. Eneroth, of Stockholm, has sent us a copy of his *Svensk Pomologi*, Volumes I. and II., bound in one octavo volume. This "Pomology of Sweden" is a capital book. We feel that the letter-press is worthy of the figures, and these we see are excellent, both the wood-cuts and the chromo-lithographs. They represent to the life the apples, pears, plums, and some of the small fruits of cultivation in that country, where, in the northern part especially, the length of the summer days makes amends for the shortness of the season. Dr. Eneroth also sends a recent appendix, entitled, when put into English, "Contributions to the Pomma of Europe at its Northern Limit." It will be interesting to know the capabilities of our American apples in this respect, so we have abstracted the following results of their culture for several seasons in latitude 59°, or thereabouts, which parallel, in our country, is about the middle of Hudson's Bay:

The BALDWIN appears to have failed altogether, and while beautiful exteriorly, is small, and the flesh is hard and dry, and does not come into eating until March. Not worthy of cultivation.

CANADA RED.—This is found to be an excellent keeper, and in quality is regarded as a rival of the Ribston Pippin.

The MCCLELLAN apple, thus far, gives promise of being a very useful variety.

COX'S ORANGE PIPPIN.—This unites high character with great beauty, and is regarded by Dr. Eneroth as one of the finest varieties of apple of which he has any knowledge, and he thinks that it will be cultivated everywhere in Sweden where fruit cultivation is at all possible. It keeps until April, when it is as good as in January.

NEWTOWN PIPPIN.—This seems to sustain its high character there, and, grown on espalier, has produced fruit of uncommon size.

The EARLY STRAWBERRY also appears to be well suited for Switzerland, and the SWAAR promises to be there, as it is with us, an apple of high character and of great value. A. G.

Bare Pastures in Autumn.

Why should meadows and pastures be brown and bare late in summer and in the autumn? Lawns can be kept green, and grass plots for late soiling may be made to yield a good cutting in October, "brown October," as it has been called. The reason is that we deal more liberally with our lawns and soiling plots; it is not that we do not cut them close, for no grass land is cut closer than a well-kept lawn. It is not the climate either which we have been so ready to blame for our brown and dry fields, but something in our management. The fact is, we do not give our grass lands a chance to do the best they can. As we write we look out upon a grass field which has been cut the third time, but which has been top-dressed after the first cutting; and another beside it which has been pastured since it was cut in June. The former is in complete verdure, and the ground is thickly covered; the latter is a miserable exhibition of bare brown spots, interspersed with masses of ragweed, left uneaten by the cows; a fair representative of the majority of meadows and pastures. When we have learned that it is possible to make more profit from an acre of grass, than from an acre of any other crop, we shall do justice to it and treat our meadows liberally. Just now it is very important to consider what this treatment shall be. A coarse, tufty growth should not be left on the surface, which dies but does not rot, and is in the way of the mower next season; but this cannot now be removed by pasturing, which would only leave it in patches, nor by mowing, which would be

a costly way of getting rid of it, unless it is considered that the advantage would over-ride the expense. Perhaps to mow over such a surface, and leave the cuttings on the ground as a mulch and a fertilizer, might be a cheap way of disposing of it. But the most helpful thing to do, is to give a fair top-dressing of manure, fine and well rotted, before the winter. This will be well washed into the soil to nourish the roots, so that an early and rapid growth will be made in the spring, after a smoothing harrow has been run over the surface to break up any lumps that may remain. This early growth is the greatest advantage, because the crop being cut before the usual dry weather occurs, a second growth begins immediately, and is ready to cut very soon after the usual first cutting would have been made under other circumstances. During the hot, dry season, the soil is well shaded and protected, and the roots are uninjured, and when the second crop has been gathered, a third gets under way at once. This exacting treatment of course requires liberal return, and in this case the "liberal soul shall be made fat." In fact, niggardliness in the treatment of the soil is the worst economy; while liberality is returned many fold. This is especially true with regard to grass lands, which in America, on the average, can pasture one steer or cow, only, upon seven acres; while in England pastures that will fatten one bullock per acre are common.

The want of manure with which we should be so liberal is the great difficulty. But this may be managed by devoting one special compost heap for this purpose, and enriching this with the addition of bone dust, potash salts, gypsum, or phosphate of lime and wood ashes. If this is prepared in time for use in the fall, and a light dressing of nitrate of soda and gypsum, or grass fertilizer is given after the first cutting, there can be little doubt that the dry brown appearance of the fields will be changed to verdure, and the barns filled with a largely increased product.

A Cheap and Convenient Cow-Shed.

Mr. F. E. Gott, Spencerport, N. Y., favors us with a sketch and description of his combined cow-shed and pigpen. It consists of an open shed, with a box-pen for the cow one side, and the pigsty on the other. The whole shed being twenty

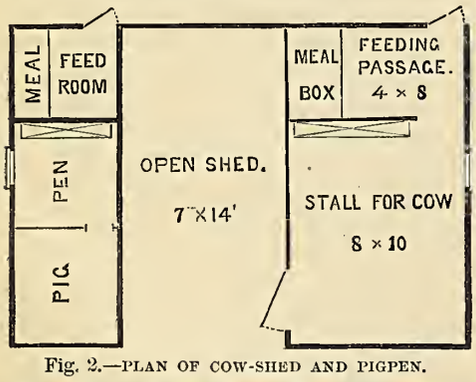


Fig. 2.—PLAN OF COW-SHED AND PIGPEN.

feet long and fourteen broad, covered by the same roof. It is constructed of hemlock lumber, and should not cost over fifty dollars. The outward appearance of the shed is shown in fig. 1. The posts in front are twelve feet in hight, and the rear ones eight. The boards are put on vertically, and battened on the sides. The roof is made of rough boards laid double, and breaking joints, so that it will not leak. The box for the cow is eight by ten feet, and six feet and four inches high, and has a feed passage four by eight feet adjoining it. The middle portion of the building is an open shed, seven by fourteen feet, and is used for storing muck, protecting the manure heap from the rains, etc. The pigpen occupies the left end of the building, and is separated from the central or shed portion by a low partition, while the cow-stall is boarded up to the roof. The floor, being six feet and ten inches from the ground, provides storage room between it and the roof in which to put hay. Mr. Gott suggests that it would be better to have the posts two feet higher, thus providing a loft in which over a ton of hay could be stored. The ground plan of this cheap and convenient building is shown in figure 2, giving the position of the doors, meal-boxes, open shed, feed-rooms, etc.

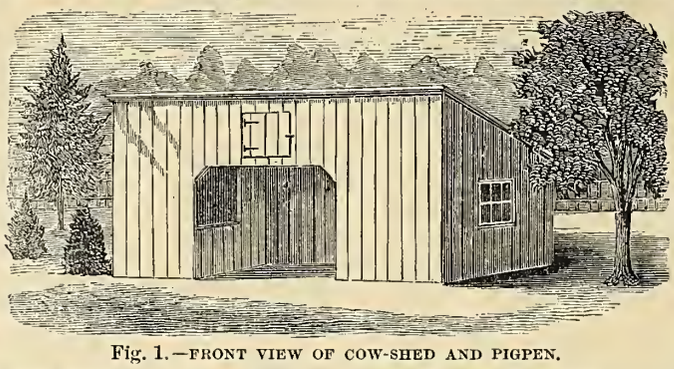


Fig. 1.—FRONT VIEW OF COW-SHED AND PIGPEN.

Editorial Correspondence.

Fargo, Dakota Territory.

Turn to the map of North America, follow a line west from the westerly point of Lake Superior some 254 miles and you are at this place, which, in reaching, we have travelled 1,661 miles by rail from New York. To many of our readers, unfamiliar with the country, this doubtless appears to be far into the cold, unhospitable regions of the north—a very wilderness. Yet here we are, in a hotel, as comfortable as almost any in the Metropolis, in the midst of a flourishing town of 3,000 people, where yesterday we visited churches and Sunday-schools that seemed no different from those enjoyed at home. So far as the people are concerned they appear as if one of our best New England or New York villages had been taken up bodily and transplanted here—people, houses, gardens (minus the fruit trees), etc.

Some Wheat Fields.

After arriving here, we made a circuit of about 40 miles in a southwesterly and westerly direction over the nearly level, treeless expanse, broken only by two large streams, termed the Cheyenne and Maple rivers, margin-lined with a small strip of low trees and shrubbery. Throughout nearly all this long ride our road was bounded by fields of waving grain, or those thickly studded with shocks just cut; and these fields stretched away on either side as far as the eye could reach. At one point was a single plot of wheat four miles long and one mile wide, that is, **2,560** acres all in one body, while only roadways or small plots of grass or oats separated this field from other extensive wheat fields on all sides. Being able to judge pretty accurately of the yield of ripened wheat, we estimate the product of these numberless acres at full 20 bushels of plump grain, some say 22 bushels for each acre—varying, however, from 15 to 30 bushels, though generally pretty uniform.

The Noted "Dalrymple Wheat Farms."

While there are many large wheat farms hereabouts, of 300, 500, 1,000 acres, and upward, and a multitude of others are being opened, a great deal has been said in the papers about the "Dalrymple Farm," the accounts, as we have seen them for two or three years back, varying greatly. We have, therefore, attempted to get at the real facts, and for this purpose called upon Sheldon C. Dalrymple, who received us with characteristic western hospitality, and freely responded to our numerous queries. There are no less than nine farmers here bearing the name of Dalrymple, all related, and all originally from Warren County, Pa.—two of them, Oliver and S. C., having, on the way, occupied large farms in Minnesota for a few years. Most of them came here from two to five years since with scant if any ready means, or, as they express it, "with nothing but a 'Grip-sack' in their hands. But they are all now, we believe, the owners of what would be considered ample domains in old Pennsylvania.

Location of the Farms.

Standing at the Railway Station, some 18 miles west of Fargo, and 2 miles east of Castleton Depot, there is to the southward what is known as the "Alton Farm," extending say 4 miles north and south, and 3½ miles east and west, and containing about 9,000 acres. Of these 6,000 are now in wheat and oats, mainly wheat—here, as on other farms, oats enough being raised to feed the working animals. East of the Alton Farm is the "Cass Farm," extending some 4 miles along the south side of the railway, and southward about 2½ miles—containing about 6,500 acres, of which 5,000 are in grain this year. North of the railroad and opposite the Cass Farm, and part of the Alton Farm, is the "Cheney Farm," extending east and west some 5 miles, and northerly an average of 2 miles. This embraces 5,500 acres, with 4,000 acres now in grain. On account of the original ownership of only alternate sections by the railroad, and the settlement by others of some plots, as well as the successive purchase of various pieces, the farms are not entirely compact, but have irregular outlines with interjected plots of other owners. The "Alton Farm," so named from its Superintendent, Alton Dalrymple, for easy reference, is owned entirely by Oliver Dalrymple. The "Cheney Farm" was originally owned by Benj. P. Cheney, of Boston, Mass., and the "Cass Farm" by Geo. W. Cass, of Pittsburg, now of N. Y. City. Oliver Dalrymple took charge of these with certain facilities in the way of capital, to work them, and with the privilege of owning an undivided half, if in 10 years he should make *profit* enough to pay the original cost. Though the time has scarcely half elapsed, we understand this has been done and he is now the half owner outright. The other Messrs. Dalrymple own various plots, mainly located north, northwest, and northeast of the "Cheney Farm" as follows: S. N. Dalrymple (brother of Oliver), has 1,500 acres 5 miles north. S. C. Dalrymple, who manages the "Cass Farm," owns 2,500 acres, 2,000 now in grain, and managed by D. W. Dalrymple. O. C. Dalrymple owns 1,500 acres, 400 now in grain, but he manages the "Grandon Farm," noted below. C. G. Dalrymple owns 320 acres, 240 now in grain. W. C. Dalrymple owns 160 acres all now in grain. N. M. Dalrymple owns 320 acres, 160 now in grain, and superintends the "Watson Farm." D. W. Dalrymple owns 320 acres, 110 now in grain. Most of the Messrs. Dalrymple are young men, and while owning smaller farms are at the same time managers or clerks on other farms.

Oliver Dalrymple is General Superintendent not only of the "Alton," "Cass," and "Cheney" farms above noted, but also of the "Grandon Farm," situated in the Red River Valley, 35 miles north of Fargo, containing 45,000 acres, of which 7,000 acres are now in grain; also of the "Watson Farm" of 23,000 acres, a dozen miles or so south-east of the "Alton Farm." He is, we judge, a general adviser of operations on all the farms above referred to. He is the "General-in-Chief"—the "Veteran"—and is spoken of as the "old man," though only some 45 years old. The others hold various ranks or offices, and the whole farming operations are carried on with a sort of military, or rather a manufacturing system, with close connections, yet distinctive departments, from the largest to the smallest matters. For example, in a plot of 420 acres of ripe wheat, we saw a row of 16 self-binding reapers, each drawn by three horses abreast, or more mules than horses, marching in procession around the whole field at once, each machine taking off a strip 5 to 6 feet wide, and dropping the bundles at the side. If a machine got out of gear, it turned aside and the rest of the phalanx moved on. An expert, "Superintendent of Machines," on horseback, with a kit of tools, galloped to the "lame" implement, and generally soon had it repaired and in line again. Thus every round cut and bundled a strip 80 to 100 feet wide, and 250 acres were cut during the day. Another Superin-

tendent of "Shockers," with 20 to 30 men, followed the machines and put the bundles in shocks. In other fields similar gangs were at work, usually 12 to 16 machines. Some of the older and less perfect harvesters required an expert for every five or six implements. The 27,000 acres of wheat under the management of the Dalrymples, cut this year, required the use of about 150 of these self-binding harvesting machines to run for an average of about two weeks each. Imagine then 150 machines in a line of battle, some two miles in length, and you have an idea of harvesting by the wholesale in Dakota.

540,000 Bushels of Wheat.

As from our own estimate the entire 27,000 acres of the Messrs. Dalrymple will this year average at least 20 bushels per acre, the product will be full half a million, or 540,000 bushels—requiring 13,500 wagon loads of 40 bushels each to take it to the railway; and 2,160 freight cars, carrying 250 bushels each, to transport it to the distant market. These wagon loads in line, 50 feet each, would extend 120 miles; and the train of cars over 12 miles long, if each car occupies only 30 feet of track.

But this is only a small part of the wheat produced the present year in this immediate section. There are hundreds of other wheat farms ranging all the way from forty up to thousands of acres each, such as the "Sharon and Amenia Farm," 7 miles N. E. of Castleton, containing 25,000 acres, just starting, but having 2,000 acres in harvest; the "Williams Farm" of 3,000 acres, 2,000 now in wheat; the "Hadwin Farm," 5 miles west of Castleton, of 5,000 acres, some 2,000 in harvest. (From this farm 1,280 acres were recently sold, with the crop on, for $33,000.) But

Men of Small Means

need not be set back by these large figures. We have seen plenty of men who came with only a few dollars and a team, and by breaking land for others and doing various jobs, then taking up land of their own and cultivating it, have gradually put themselves on the road to a competence. Some of these who preëmpted the alternate sections of Government land 5 years ago, at first lived in "sod cottages" or "dug-outs," are now possessors of farms worth $4,000 to $5,000 and upwards. There are now no such lands close to the railway to be preëmpted, but there are in counties north and south, and a little further west, where the railway has but recently extended. How good these lands are we shall know better when we see them a few days hence. There are some good railway lands still on sale at moderate prices we believe in the Red River Valley and on either side of it.

Briefs.

On the larger farms the threshing is mainly done by steam power, the portable engines and threshers being moved from place to place within easy hauling distance of the shocks. Jobbers also go from farm to farm with steam or horse-power threshers. ...As soon as the main harvesting and threshing is over, the teams start at once plowing the stubble, and before winter it is all ready for spring sowing, which begins here about April 1st....The straw is generally burned to get rid of it....In breaking the new prairie, "back-setting" is preferred; that is, the sod is turned about 3 inches deep from May 10th to July 1st; then beginning with that first broken it is plowed about two inches deeper, turning the sod under....Seeding is not done by drilling, but with the two or four-horse broadcast seeder....Oats are grown mainly for the home teams, the yield running from 40 to 70 bushels per acre....Corn grows fairly, but is not a certain crop....The Dalrymples estimate that it costs inside of 45 cents per bushel to produce wheat and put it upon the cars, reckoning all expenses except interest on cost on land, and they would contract to grow it for that. The average freight from here to New York, including storage, commission, and all charges, is estimated to average a trifle under 30 cents per bushel. We can therefore calculate that so long as wheat will bring 90 cents to $1.00 per bushel at the seaboard, it will pay well for producing it here....Fields that have been plowed one inch deeper each year have now produced continuous good crops of wheat for five successive years....Only spring wheat is grown here.

Why Crops Mature Far North.

People often wonder how it is that many crops grow and mature in the high latitudes, where the summers are of very brief duration.—The days are longer as we go towards the poles, until at latitude 68° the sun does not set at all for a brief period. Since the sun's light, as well as its heat, produces growth, the longer it is above the horizon the greater is the growth of plants per day. Thus, where the days average 21 hours of sun, there are, in 100 days, 2,100 hours of sunshine, while there are only 2,100 hours of sunshine in 140 days that have an average of only 15 hours of sunlight. As the isothermal (or equal-heat) line tends northwards after we pass westward of the south end of Lake Michigan, it is easy to understand why northern Dakota, Montana, Idaho, and Washington Territory, should be as favorable for farming, so far as climate is concerned, as some of the Eastern States lying much farther to the south.

Bismarck, Dakota Territory.

From Fargo to this place, 194 miles, we passed by rail over a woodless prairie, except along the streams, somewhat rolling, and of various quality as to fertility. There are numerous incipient towns at the Railway Stations, including quite a place at Jamestown, 101 miles this side of Fargo. There are here and there, all along the route, farms opened, and opening, by settlers. At several points fair crops of wheat are being harvested, and by careful selection multitudes can choose both railroad and government lands, that will fall little if any below those we have described, for wheat growing. Indeed the best wheat we have seen, taking the whole crop, is on the large Steele Farm, 40 miles east of Bismarck. We estimated the yield at 24 or 25 bushels per acre, at least, for all the fields in sight (28 bushels is claimed). Bismarck is a brisk growing town on the Missouri, already numbering 2,500 or more inhabitants, and promising to be an important future business center, as it already is on a small scale. The Northern Pacific Railway, which is being pushed through the Yellow Stone at the rate of one to two miles per day, is completed to a point one hundred miles west of Bismarck. At this point (Bismarck) we take steamer up the Missouri to visit some of the Indian Agencies at Fort Peck, etc. O. J.

Science Applied to Farming—LXI.

Our experimenters of last year gave us some interesting facts bearing upon the effects of different fertilizing materials upon the quality of the crops. From the full details published in the pamphlet reports I select the following:

"A number reported the amounts of 'good' and 'poor' corn; but fourteen, however, had made thoroughly accurate weighings The percentage of 'good' corn were as below:

NUMBER OF POUNDS OF "GOOD" CORN IN 100 POUNDS OF TOTAL CORN, WITH THE DIFFERENT FERTILIZERS.

NUMBER OF EXPERIMENT.	*O* Nothing.	*A.* Nitrogen.	*B.* Phosphoric Acid.	*C.* Potash.	*D.* Nitrogen and Phosphoric Acid.	*E.* Nitrogen and Potash.	*F.* Phosphoric Acid and Potash.	*G.* Nitrogen, Phosphoric Acid, and Potash.	*H.* Plaster.	Farm Manures.
8	48	46	56	58	69	63	32	86	67	64
13	28	39	73	72	77	95	85	83	77	59
15	94	91	92	83	95	92	85	92	62	..
17	22	26	39	67	44	27	24	21	8	56
26	61	56	68	43	83	52	62	84	48	58
31	34	74	91	73	76	67	80	84	..	71
32	19	23	30	23	28	26	29	33	37	41
33	39	31	53	34	61	53	49	16	26	..
37	63	68	88	51	86	69	80	84	68	..
42	81	87	94	95	94	96	96	95	95	..
43	72	57	86	52	82	48	74	45	78	..
44	68	65	85	64	..	..	..	88	89	..
50	86	87	90	92	90	94	93	97	94	..
53	68	67	71	67	69	61	67	77	67	..
Average 14 Exp'ts, '79.	56	58	72	62	73	64	61	69	63	58
Average 14 Exp'ts, '78.	65	67	72	80	72	86	86	85	73	81

The figures accord with common experience that the largest crop has the largest proportion of good corn. I see nothing to account for the poorer average quality in 1879, except the bad season.

Ratio of Stalks to Shelled Corn.

The weighings of corn and stalks were made at different stages of dryness. In some cases the stalks were cut above the ears, in others close to the ground. The results are consequently discrepant. The averages are interesting as showing the relative effects of the fertilizing materials. The figures represent the number of pounds of stalks to 100 pounds of shelled corn in 12 experiments.

NUMBER OF POUNDS OF STALKS TO 100 POUNDS OF SHELLED CORN.

NUMBER OF EXPERIMENT.	*O* Nothing.	*A.* Nitrogen.	*B.* Phosphoric Acid.	*C.* Potash.	*D.* Nitrogen and Phosphoric Acid.	*E.* Nitrogen and Potash.	*F.* Phosphoric Acid and Potash.	*G.* Nitrogen, Phosphoric Acid, and Potash.	*H.* Plaster.	Farm Manures.
3	374	625	262	487	383	491	320	375	437	...
8	124	94	107	104	70	109	138	89	117	152
15	100	113	205	335	122	166	307	195	429	...
16	281	190	164	154	137	132	136	70	271	66
17	304	228	156	174	145	236	155	144	422	131
26	108	281	140	321	86	272	192	139	93	128
31	146	134	91	110	110	139	175	152	...	157
34	72	95	75	75	85	98	89	97	95	88
37	184	186	135	218	140	216	155	165	186	...
42	98	92	90	104	95	97	98	89	96	103
45	...	66	96	79	72	74	69	72	77	76
52	158	104	163	191	110	254	141	151	188	140
Average 12 Exp'ts, '79.	149	156	120	168	105	162	141	124	219	115
Average 10 Exp'ts, '78.	173	143	149	145	129	176	128	131	139	133

The proportion of stalks to shelled corn is smaller in the larger crops, and conversely the poorer crops have more stalks for the same amount of corn than the better crops. Contrary to what is commonly supposed, the nitrogenous fertilizing materials do not seem to have increased the amount of stalks as compared with shelled corn. As to

The Effects of the Fertilizers on Quality of Other Crops,

there are but few reports. Several have spoken of the quality of the potatoes grown with chemicals as compared with farm manures. The nearly unanimous testimony is that the potatoes with artificial fertilizers were of finer quality, and less disposed to rot than with the farm manures. The very general good results from the use of potash salts with potatoes, makes it very desirable to know the effect of muriate of potash upon the quality of the produce. It is commonly stated that potatoes grown with the muriate (chloride), are less "mealy," and more inclined to be "soggy" than with the sulphate. Such reports as I have, however, represent the potatoes grown with the muriate as of entirely satisfactory quality. The sulphates are rather costly and variable in composition, while the muriate is reliable, and so concentrated and cheap as to be within the means of almost every one who has potatoes to grow. If it can be demonstrated to bring potatoes of good quality, it proves, and I certainly believe it will prove, of inestimable value for this purpose in all our older States.

A Word to this Season's Experimenters.

I have given the above notes of what our experimenters have been doing with a purpose. The blanks that are sent for reports of the experiments bear the motto: "*One great want of our Agriculture is closer study and observation by farmers.*" It is not merely the facts observed and reported, but the habit of accurate observation that will do good. To encourage this is one of the great objects for which the experiments have been planned. And so I trust the experimenters will pardon me if I repeat here the requests made in the directions and blanks, that they make full and accurate reports of the details of their experiments. We want to know not simply how the superphosphate and potash salts, farm manures, and other materials, compare in the different trials, but how the results are affected by the different circumstances of soil, previous treatment, methods of tillage, of application of the fertilizer and cultivation of the crop, weather, effects in succeeding seasons and succeeding crops, and so on. This collecting and comparing of the experiments of intelligent men under varying circumstances, is one of the ways in which great good can be got from Science applied to Farming.

W. O. ATWATER.

A Complete Cottage, Costing $1,100.

BY S. B. REED, ARCHITECT.

These plans are for an inexpensive seven-room dwelling, similar in character to those published in last month's *American Agriculturist*. Several of these cottages have been erected in the manufacturing districts of the Eastern States, where they are regarded with special favor. They are equally adapted to most other parts of the country, and will be found to be very convenient, and to contain sufficient room for a family of six persons. For economical reasons, but three rooms are usually appropriated to general use—a parlor, dining or sitting-room, and kitchen, the remainder being furnished as chambers. In such cases the apartment marked "Dining Room" on the plan is used as a bedroom, making four chambers in all, and increasing the real capacity of the house to accommodate a family of eight persons....**Exterior.**—Two elevations are given (figures 1 and 2). The foundations show 2½ feet above ground, a good hight for convenient entrances, besides giving opportunity for suitable outside windows from the cellar for light and ventilation. The outside openings and dressings are sufficiently varied to make the whole interesting and somewhat picturesque. The front entrance is of good width, and has a roof resting on chamfered columns and side railings of open work. A square-angled bay-window projects in front, with chamfered work, below the sashes. The cornices, gables, belt courses, etc., are tastefully arranged, giving opportunity for the proper distribution of shades in painting....**Cellar**—It is of the size and shape of the main house section, as shown in fig. 4. Its hight is 6½ feet; it has an outside entrance under the stoop, and is lighted by three windows. The kitchen is supported by piers, and the spaces between are inclosed with boarding.

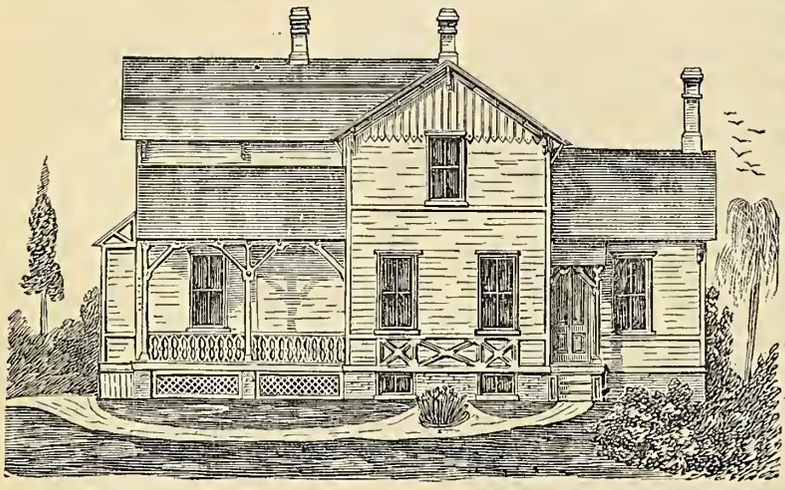


Fig. 1.—SIDE ELEVATION OF THE HOUSE.

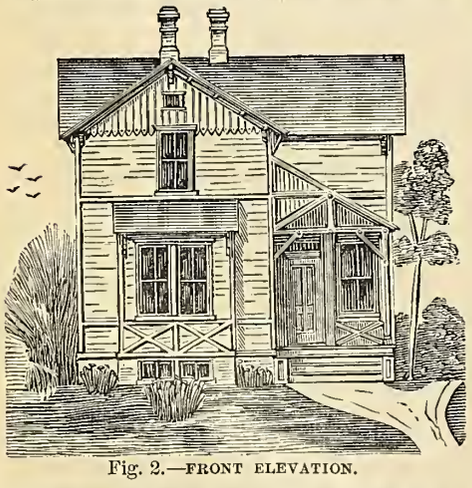


Fig. 2.—FRONT ELEVATION.

....**First Story** (fig. 3).—Hight of ceiling 9 feet. The front entrance opens from the veranda to a vestibule, and from it to the parlor and dining-room. The Parlor is pleasantly arranged with a bay-window in front, and single windows in two of its sides, giving views in three directions. The chimney is placed directly opposite the bay-window. Suitable spaces are allowed along the walls for the furniture usually required in such an apartment. The Sitting-room has windows in three of its sides, and doors leading to the dining-room, kitchen, and a closet. The Dining-room has two windows on one side and connects with the kitchen, two closets, and the cellar stairs. (Should this room be made a chamber, as before suggested, then the space under the main stairs may be used as a closet.) The Kitchen has three windows, with outlooks in two directions, an open fire-place, a sink, door leading to the outside rear stoop, and a kitchen pantry; the latter is of good size, has one window, and is thoroughlyshelved. This "pantry" arrangement is a necessity in a New-England house, as in such an apartment their stores are kept and most of the pastry work and preparations of food for the table is done. On one side just below the window a broad shelf is placed, extending the whole length; underneath and attached to this shelf are three drawers, 5 inches deep and 18 inches wide, for towels and such things. The remaining space is left for barrels, pails, etc. Above this shelf at each side of the window and across both ends, shelves 10 inches wide, placed with convenient space between for crockery, spice-boxes, etc. On the door or opposite side, cleats and projecting pins are put for suspending the various utensils used in cooking. To house-keepers who have once used such an apartment, they are ever after indispensable ...**Second Story** (fig. 4).—Hight of ceiling 7 feet. The stairway ascends from the lower vestibule to a central hall, which is lighted by one small window. There are three fair-sized chambers and three closets. Each room adjoins a chimney, giving opportunity for the use of stoves when required....**Construction.**—The foundation is of broken field stone and mortar, neatly pointed on the outside. The frame is of sawed timber, siding of "novelty" pattern, gables of vertical boarding with their lower ends cut to pattern and battened. Roofs of shingles. The balance of the materials may be inferred from the following table of **Estimates.**—Cost of materials and labor:

87 yards Excavation, at 25c. per yard		$ 21 75
1,150 feet of Stone in foundations, at 8c. per foot		92 00
3,000 Brick in Chimneys at $12 per M		36 00
518 yards Plastering, at 20c. per yard		103 60
2,138 ft. Timber, at $15 per M		32 07
1 Sill 4x8 in. 155 ft. long.	36 Beams 3x7 in. 15 ft. long.	
1 Tier 4x6 in. 131 ft. long.	8 Beams 3x7 in. 12 ft. long.	
1 Plate 4x6 in. 101 ft. long.	2 Valleys 3x7 13 ft. ft. long.	
1 Ridge 2x6 in. 62 ft. long.		
300 Wall Strips, at 12c. each		36 00
60 Joist, at 15c. each		9 00
190 Siding, 9½ in., at 28c. each		53 20
Cornice materials		15 00
400 Shingling Lath, at 6c. each		24 00
68 bunches Shingles, at $1.25 each		85 00
200 ft. Tin Valleys, Gutters, and Leaders at 8c. p. ft.		16 00
150 Flooring (inside), 9½ in. wide, at 26c. each		39 00
30 Flooring (outside), 4½ in. wide, at 15c. each		4 50
3 Cellar Windows (complete), at $3 each		9 00
17 plain Windows, (complete) at $5.00 each		85 00
18 Doors (complete), at $4 each		72 00
Verandas and Stoops (complete)		18 00
Stairs (complete), $16; Mantels (complete), $5.,		21 00
Closets (com'e), $6; Pump, Sink, and Nails, $25;		31 00
Painting, $75; Carting, $15		90 00
Carpenters labor, not included above		125 00
Incidentals		81 88
Total		$1,100 00

"Round Up," is the term used by the herders upon the Western Plains when they gather all the cattle together at a stated place and assort them. It is to be remembered that in that country there are no fields and fences, but all the herds run together and a sort of mutual cooperative care is exercised over the combined herd. Upon the day of the "Round Up," which is advertised and otherwise made known, the men on horseback scour the country over and drive in all the scattered droves to the place appointed for making the "Round Up." The cattle are assorted according to the brand upon them, and are placed by themselves. After the sorting is finished, the herds are counted, those ready for market are driven away for sale, the calves are branded and then the herds are let loose to wander over the plains as before. The branding is done by a hot iron which makes some letter or "trade mark" upon the skin of the animal. The process of branding is to some extent a cruel one, but it seems to be the only way of making a permanent mark upon the roving animal. The brands are registered in the County Clerk's office, and the mark is the undisputed title of ownership against all other claimants. Adult animals without a brand are public property, and can be branded for his own by any person.

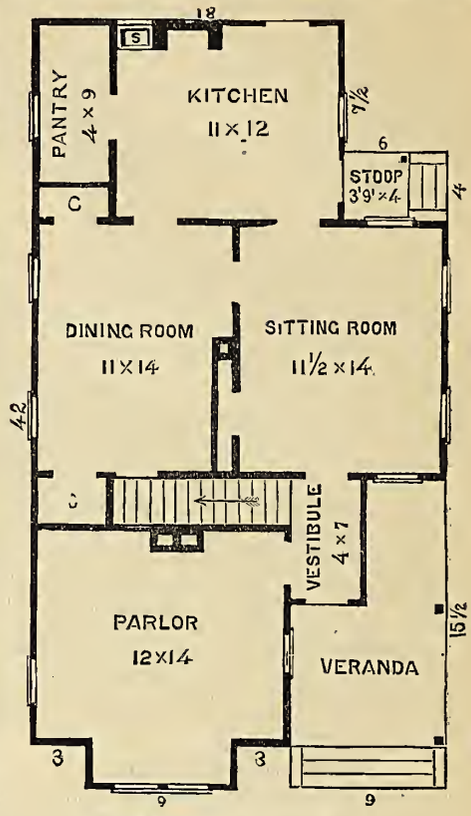


Fig. 3.—PLAN OF FIRST STORY.

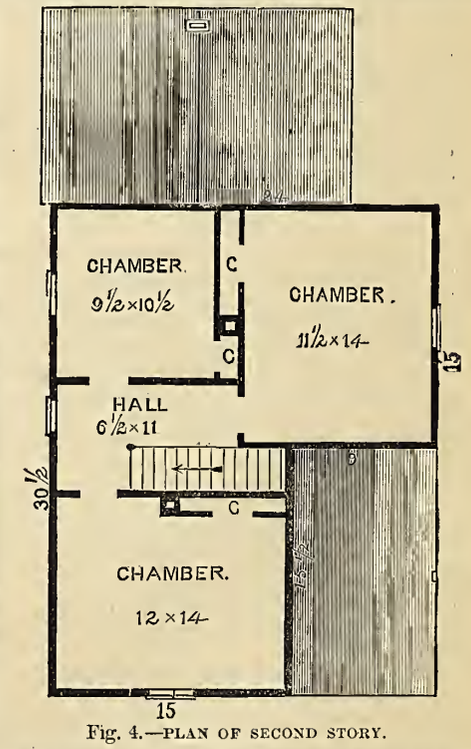


Fig. 4.—PLAN OF SECOND STORY.

The Columbian, Black-Tailed Deer.
(*Cervus Columbianus.*)

The beautiful Black-Tailed Deer is quite generally distributed over the western portion of the North American continent, inhabiting most of the hilly lands of California, and extending on the west of the Rocky Mountains nearly to Alaska. It was first noticed by Lewis and Clark (near the mouth of the Columbia River), while on their expedition to the Northwest, but it was not until the discovery of gold in California that this Deer became generally known to white men. The Black-Tailed Deer is a trifle larger, and of a stouter build, than the Virginia Deer, measuring six feet from tip of the nose to the end of the tail, with a hight at the shoulder of two feet and six inches. As shown in the engraving, this Deer has a tuft of long, pendulous hairs hanging from the umbilicus backwards between the hind legs. The horns are cylindrical, and twice forked, and have a spread of nearly two feet between the superior prongs. The antlers bear some resemblance to those of the Red Deer of Europe. The ears are narrower and the head less pointed than in the Common, or Virginia Deer. The tail is dark brown at its junction with the back, but the color deepens to a black towards the tip, giving this species of deer an easily distinguished characteristic, and one from which it takes its common name. The gait of the Black-Tail is not so graceful as that of the Virginia, it having a bound more like the Roebuck of Europe. The Black-Tailed Deer is better known to the western miners than to any other class of white men, and to its nourishing flesh many of the gold seekers owe their lives in times of scarcity of food.

THE BLACK-TAILED OR COLUMBIAN DEER (*Cervus Columbianus*).

Audubon gives a vivid description of the difficulties in the way of hunting successfully this extremely cautious Deer: "Above all things, keep the wind in such a direction as not to carry the scent to the animals." We give a portion of the description: "Once the trail has been almost lost in the stony broken ground they pass, but again they have it. Now they approach and search in different directions the most likely places to find the Deer, but in vain; at last they gain the next summit; the object of their chase is at hand; suddenly they see him—a fine buck; he is yet on the declivity of the hill, and they cautiously observe his motions. Now they see some broken ground and rocky fragments scattered towards the left; they redouble their caution; locks are ready cocked; and breathing rapidly, they gain the desired spot. One instant—the deadly rifle has sent its leaden messenger and the buck lies struggling in his gore. Short work is made of the return to camp if no more deer signs are about; and a straight cut may bring the hunters home in less than an hour, even should they have been two or three in following their prize." The writer was once, for several months, at a house on the Rio Grande, not far from El Paso, at which there was a tame Black-Tail. The house was built in the Mexican style, in a square form, with a court in the center, and the deer had the freedom of this yard. The animal having no horns, the dogs apparently thought it to be defenceless, and would attack to worry, if not to bite the deer. When the right moment came, the deer would stand upon its hind legs, nearly erect, and with its forefect close together, strike with its sharp hoofs a tremendous blow. If the dog was able to get away, which was not always the case, he was never known to repeat the attack. There is a difference of opinion as to the flesh of the Black-Tailed Deer, some regarding it as dry and less palatable than ordinary venison. The writer has frequently eaten it, but at times when any fresh meat was a luxury; under those circumstances it is difficult to form an opinion.

Dogs—The St. Bernard and "Cocker."

Dogs are so easily taught and are capable of such noble traits of character that we cannot but look upon them, as a class, with respect, however much we may despise some particular cur. There is no more faithful, keen-sighted, sagacious, thoughtful and courageous friend in the whole brute creation than a well-trained and intelligent dog. From the earliest time he has been, and will continue to be, the close companion of man. There are dogs for a hundred special purposes; they having been bred for centuries to some particular end; some to hunt birds, others to chase the fox; some for short legs and long hair, others for length of limb and shortness of hair, etc., etc. Out of this long list of breeds, and cross breeds, it is difficult, in fact, impossible, to select the one best fitted for the farm. It is so much a matter of taste or fancy that each one must, and generally will, select his own dog. There are certain points, however, that a farmer's dog should possess in order that he may be a profitable adjunct of the farm. He should be a faithful watcher of persons and property, and at the same time not savage to strangers within the gates—he should be safe as well as a means of safety. He should be at home and at peace with the live stock, being able to handle them with gentleness, and above all easy to learn, and obedient to his master. This may be asking a good deal of a dog; but there are those which meet the requirements and they are the dogs that it pays to have on the farm.

The Mount St. Bernard Dog (fig. 1), is closely related to the Mastiff, but in temper and disposition more like the Newfoundland dog. Until recently this dog has been confined to the Alps and neighboring countries, where he has long been of great service in recovering persons lost in the snow-storms of that region. The actions of these dogs over a snow-bound traveller are said to be almost human, so great are the intelligence and sympathy which they exhibit. There are two quite distinct varieties of the St. Bernard dog, differing principally in the length of the hair, and known as the Rough and Smooth St. Bernard. The best

Fig. 1.—THE SMOOTH MOUNT ST. BERNARD DOG, "MONARQUE."

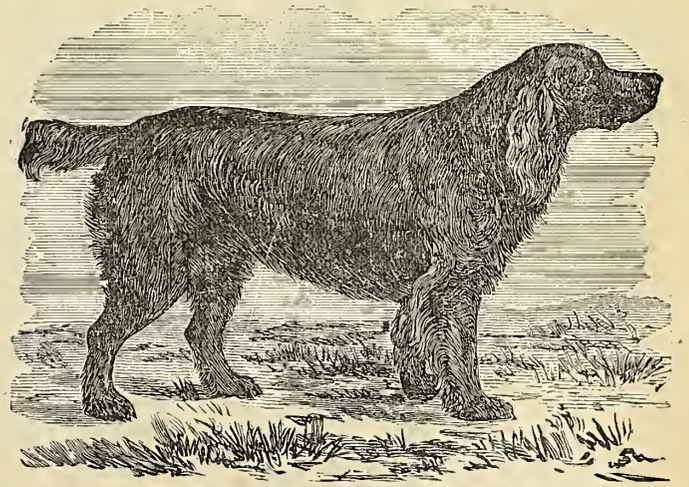


Fig. 2.—THE COCKER SPANIEL, "BRUSH."

strains of both varieties are now to be found in this country, and they make remarkably good tempered and trusty household dogs, being particularly gentle to women and children. The Smooth variety of St. Bernard, shown in figure 1, is red and white, with a broad white collar—many prefer the Rough or the long-haired variety, the color of which is often a deep brindle.

THE COCKER SPANIEL, OR "COCKER," includes a number of sub-varieties, so that it is difficult to describe it very definitely. It may be said in general terms to be an active spaniel, averaging about 14 pounds in weight, elegant in outlines and of a lively and spirited carriage. The head is round, the forehead being oval, the ears are of medium size and well clothed with soft, wavy hair. The tail (which is usually cropped), is naturally long, being somewhat like, but more bushy than that of the Setter—to which breed it has a general resemblance. The "Cocker" is the hunter's dog, having been bred and trained as an aid for the sportsman. While out for game he has his own peculiar characteristics. "Stonehenge" says: "In hunting he keeps his tail down like the rest of his kind and works it constantly in a most rapid and merry manner, from which alone he may be known from the Springer, who also works his, but solemnly and deliberately, and apparently without the same pleasurable sensations which are displayed by the Cocker." The illustration, fig. 2, on previous page, is a portrait of Dr. Gillette's dog "Brush," an excellent representative of the Cocker Spaniel.

Plan of a Poultry House.

"W. R. S.," Morris Co., N. J., sends sketches of a Poultry House, and says: "Thinking, perhaps, that from the plan of my hen house a new idea might be gained by any who may be contemplating a plan by which to build a hennery, I will give mine as briefly as possible. My principal considerations

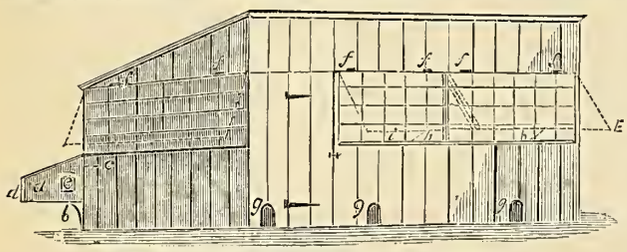


Fig. 1.—FRONT VIEW OF POULTRY HOUSE.

in devising a plan were cheapness, warmth, ventilation, convenience, and with these in view, I have succeeded in building a house, at a cost of less than $45, being 6 by 16 ft. on the ground. I have kept 75 fowls in it at one time, and for a period of several months; and as far as my experience extends, I am thoroughly convinced that with a properly arranged house, and proper care, fowls can be kept in large numbers, yielding as much profit as if with more room and less care. The front of the house faces south-east. The side or back, and end,

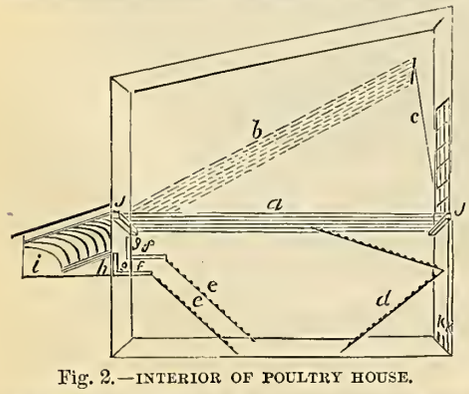


Fig. 2.—INTERIOR OF POULTRY HOUSE.

not seen in figure 1, is made water-proof by paint and putty, and has no opening of any description. The nest alley, figure 1, *a*, is 16 ft. long, 2 ft. wide, 1 ft. high at the back, *d*; *b*, braces to support alley; *c*, strip of iron bolted to alley and main building (inside); *e*, light of glass, one in each end of alley. The cover to alley is hinged to main building and used as a lid; it can be locked if desired. The windows are fastened on by butt hinges, *f*, *f*; *E*, dotted lines, showing a position in which the win-

Fig. 3.—THE FRAME OF ROOSTS.

dows may be braced by a stick, *h*, and give ventilation without draft; *g*, entrance doors; *i*, hooks to fasten windows. The roosts, *a*, are made as shown in figure 2, and are simply laid on the joists, *J*, *J*, the frame (fig. 3) not being fastened to the joists. The roosts may be raised to *b* by placing the stick, *c*, under them, and the house cleaned, etc., without the roosts interfering in any way; *d*, *e*, *e*, ladders. There is a platform, *f*, opposite the entrance to nest alley; *g*, entrance to nest alley; *h*, space in nest alley in front of nest boxes; *i*, nest boxes; *k*, fowl entrance to house."

More About Tenant Farming.

We have often heard the remark made that farming property in this Commonwealth does not, on the average, pay three per cent interest. The statement is generally accepted as substantially true, though we may not be able to establish it by statistics. We were not a little surprised, therefore, to find a landholder in our recent travels that claimed that his farm, which he had rented for sixteen years, paid him now an interest of six per cent, and in the flush times after the war that paid ten per cent annually. After drawing from him the strong points of his management, we concluded his estimate a reasonable one. The farm in question is an old homestead, upon which he was born and brought up, and which he managed in person for many years, until he made money enough to live easier in the neighboring village. In the letting of his farm, he had the advantage of knowing just what he wanted in a tenant, and the details of the management needed for successful results upon that particular piece of territory. He had also a strong personal interest in it as his own home, and the home of his ancestors for several generations, which doubtless had something to do with the satisfactory returns which it gave. The man should smell of the soil he handles who would make money out of it. The first strong point in his success was a good soil to begin with, on the best streak of land in the township, indicated by the size and quality of its timber, when it was selected by its first proprietor, two hundred years ago. It has maintained its reputation for good crops from that day to this, and its owners have never been poor men. It was kept in good heart under his own management, and was handed over to the tenant with a large quantity of manure in the yard and sty, and a good system of husbandry laid out for him. Without a good soil, in good heart to begin with, the investment must have paid less interest. The farm consists of 280 acres, and is valued at $10,000. The leading interest is the dairy, making butter for the summer market, with pork and poultry enough to use up the skim and buttermilk. Plenty of manure made by feeding out all the hay and most of the grain raised upon the farm is one of the maxims of farm management. The tenant must make as much manure, measured by the cart load, as he found upon the farm. Sell no hay, no matter how much is left over, is another of the maxims. But if any is sold, its equivalent in manure must be brought back upon the farm to increase its fertility. The remedy for a surplus of hay, in barn or stack, is an increase of stock, which adds to the manure heap and adds to the animal products that may be sold the following season. There is always a surplus of hay to guard against such seasons of drouth as we had last spring, and short crops. Another item in this farmer's policy is long leases. He gets the best possible tenant to start with, and then makes it for his interest to stay. As the farm is rented at the halves, it is not very difficult to do this. If the tenant knows that he is to continue for a term of years, he has a common interest with the owner, in making manure, in raising good stock, in thorough cultivation, and in keeping up the farm. Ten thousand dollars invested in a farm like this, and managed as this is, is as secure as Government bonds, and pays a better interest. Would that we had more farming of this sort. CONNECTICUT.

A Corn Shock Tightener.

Mr. "W. P. H.," Douglas Co., Kansas, sends a description of a Tightener to be used for drawing the tops of corn shocks together at cutting time. Cut a sapling, or any stick, two inches in diameter at the butt, and several inches in length, shave it off smooth and sharpen the small end. A three-fourth-inch hole is bored an inch or two from the large end, and a seasoned hickory, or an iron, pin eighteen inches long is inserted for a handle, as shown near the bottom of the accompanying engraving. Tie one end of the rope (which should be long enough to pass around the corn shock), to the larger end of the stick, putting it above the cross pin on one side and below on the other, so that it may not slip. A loop is tied in the other end of the rope and the Tightener is ready for use. In drawing the top of the corn shock together the

SHOCK OF CORN WITH TIGHTENER.

sharpened end of the Tightener is thrust into the shock, at the place where the band is to go, and the rope is thrown or carried around when the loop is put over one end of the cross-pin. "Now take hold of the handle and turn as with an auger; both ends of the rope being fast it coils around the stick and the shock can be made so small and tight at the top that it will stand up straight from September until April, and turn rain almost perfectly. A boy can make the Tightener in half an hour. After tightening up the shock, we tie with small wire, such as is used for binding grass—then untwist the rope and take another shock. In twenty minutes two men can tie what they can cut in a day."

Marsh Hay is not held in high esteem unless it is cut when very green and well cured and housed. Even then it is light, and should be fed in combination with richer foods. When left standing until late in the season it is dry and tough, and though rich in ash elements, it is inferior food, and not the best of litter, as it decomposes so slowly.

Salt-marsh hay is probably no more nourishing than that from fresh marshes, but is relished better by cattle because of its saltness. If farmers can readily get salt hay, or even that from the fresh marshes, they should do so, and if cut early it may be fed with an addition of meal or other strong food. The gain in manure for cultivated fields will compensate for the trouble in getting it in most cases.

Wayside Fountains.

On a recent trip, visiting farms in Tolland County, Conn., we found several fountains by the roadside for the convenience of travellers. One was fed by a copious spring on the hill side near the line of the road. It was conducted by a narrow trough and bit of inch-iron pipe, into a large iron-bound hogshead placed near the road-bed, and so high that horses could drink from it without loosening the cheek rein. The overflow passes off into the gutter, and after watering the thirsty traveller and his beast, blesses the adjacent meadow with many extra blades of grass. There is a fall of two or three feet as the water plunges from the spout into the cask, which is pleasant to the eye and music to the ear. This fountain, which never runs dry in summer and never freezes in winter, is a great convenience to the neighboring village and to all who have to go thither to mill and to meeting, to the store and to the post office. With very little loss of time the teams are watered. Unlike brook water, it is always at the palatable temperature, and never frozen. The whole expense of this public convenience could not have exceeded five dollars, and the cost of annual repairs is too small to be noticed. One other fountain was by a lovely road side nearly a half mile from the house of the farmer who put it up, on the road he had most occasion to travel. He had found that his horse might drink safely all the water he wanted if he travelled a half mile after drinking. It saved an extra trip to the stable after he reached home. All the money outlay for this public convenience was about eight rods of half-inch lead pipe, which brought the water from a spring into the trough. The labor upon the ditch and upon the chestnut log of which the trough was made would not bring the whole cost to more than ten dollars. In another case the water was brought from a brook in an open ditch, and turned into a half hogshead at the road side by a narrow trough. Not more than a day's labor was expended upon the job. The man who establishes such fountains as these is a public benefactor. He who makes a spring by the wayside, where none was before, has the charity which is twice blessed; it blesses the giver and all his beasts with perpetual refreshment, and the wayfarers of the present and coming generations will sing his praise. The statutes of this Commonwealth provide that any one who will construct such a fountain and keep supplied with water with the approval of the selectmen, shall receive three dollars annually. Oftentimes it would be a good investment for the farmer to provide this much needed public convenience, and draw the premium.

CONNECTICUT.

Gapes in Chickens.—"J. C. T.," Queens Co., N. Y., sends his experience with gapes, which is certainly very encouraging and illustrates the value of keeping the poultry, the coops, etc., in a clean state. "I have raised chickens for thirty years, and never lost one with the gapes. The disease appeared as soon as I began, but I had seen that wheat dampened and rolled in sulphur would cure it, and I tried it with entire success. Soon after, I had occasion to use a watering pot, kept in the hen house, and I became so covered with vermin, that I was obliged to take a bath immediately, and change my clothes. I set about a reform forthwith—white-washing the hen-house thoroughly, including perches, and nests, and sprinkling the floor with clean sand. When the chicks are hatched I burn the hay of the nest, and whitewash the nests again, which should always be movable—move the coops, which are also white-washed inside, to a new spot every day, keeping the hen cooped a few days, then let them run, shutting them up at night. I had no idea of preventing the gapes; my efforts were only to secure cleanliness, since then, no chicken has gaped on these premises, and, of course, the older chickens are much improved in health and vigor, so that there has never been any kind of sickness among them. It cannot too often be repeated, and emphasized, white-wash—*whitewash*, in every nook and cranny, and clean out and put dry earth or sifted coal ashes under the perches frequently. I do not say there is not a worm in the throat, I have had no occasion to examine a chicken killed by the gapes, but I *do* say, no chicken kept free from lice ever had the gapes with me."

Among the Farmers.—No. 57.

BY ONE OF THEM.

The labor market has been overstocked, in this section at least, for some months past, yet so far as I see, few of my neighbors have taken any advantage of it except to pay lower wages, which they are not slow to find out may be done. Very fair farm hands, good to work with others, and under a foreman, might have been hired at $10, except just during the pressure of haying. I hired a very active Hungarian Slavach, or Slavonian, for those

Fig. 1.—MAKING A WITHE.

wages, and found him an excellent plowman and mower, and the handiest man with an axe I ever had on the place. He was discontented and restless, and needed constant driving and watching.

The Use of Withes.

The use this fellow made of withes was remarkable. He had evidently been accustomed to binding faggots, and would take any green branch, straight or crooked, entire or branched, and placing it beneath his foot, as in fig. 1, twist and manipulate it until it made, in a very short time, a complete rope. (See fig. 2.) He would combine several withes by knotting them, and so make a rope 15 or 20 feet long, and strong enough to bear the pull of two men, or even of a horse.

This making and use of withes is not new to me, but the extreme facility with which the man made more flexible and tougher ones than I ever saw before, out of all sorts of woody growths, set me at imitating him.

I have a great stock of Ozier Willows, which we use from preference, but when in the woods, or fields, white birch, hazel, witch-hazel, alder, and even cedar and wild cherry make excellent withes. The only "trick" is to get a uniform twist, which breaks up the integrity of the fibres of the wood. It may be twisted too little, and then will be brittle

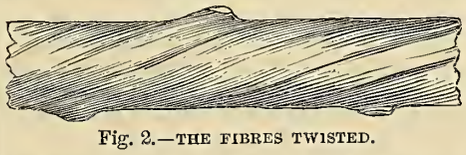


Fig. 2.—THE FIBRES TWISTED.

and perhaps break, or be twisted too much, in which case it will be weakened by the breaking of the fibres. I had a lot of corn fodder which I bound with withes with great satisfaction.

There is a "trick" or two about the handling of these withe-bands that I was glad to know. Figure 3 shows a common twist given to the ends of the withes. The extreme butt end, it will be noticed, is bent at right angle to the twist, and this gives a powerful leverage, by which the band may be very tightly drawn. In most instances there will be very little twisting of the butt end, but the smaller end will wind itself around the other. It does not matter if only at last, when the withe is fastened, we bend the butt end upon itself, and tuck as shown in figure 5. This will hold any ordinary strain, but when a very secure fastening is needed, the small end of the withe—very likely terminating in a bunch of twigs—is laid in after making one or two twists, as in figure 4, and caught in, when other turns are given. Then the end is tucked as in the other case.

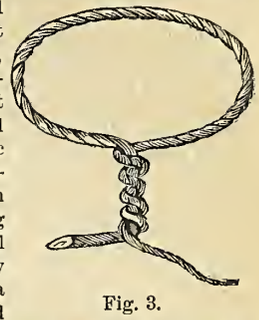


Fig. 3.

Willows.

I am very glad I have plenty of Willows. My land is moist, a portion of it, and they grow rampantly, and they are very useful not only as withes, but for many other purposes. Were they more commonly cultivated, I think we would soon learn to make them as useful as do the Dutch and French and Germans. It is no unusual thing to see wagon bodies made of Oziers plaited together. Four pieces, having holes left where they may be fastened together, and to the stakes of the wagon, constitute the whole affair, durable, cheap, and capacious, for these wagon bodies are usually employed for light loads, as for leaves and for litter

A Question in Breeding

has lately interested me, and I have discussed it with some of my friends. Ought a breeder of improved stock of any kind, whose aim is to benefit himself, his herd, and the breed, to breed for the perfection of individuals or for the establishment of a family or families? We breed individuals of course, and every breeder's aim is to produce the best individuals possible. The question is, whether he shall be satisfied with immediate results, or only with the results in the long run. Outside a select list of Shorthorn breeders, there are very few breeders of any class of animals in this country, unless we include a group of game-fowl breeders, and perhaps some breeders of Light Brahmas, too, who have not been, judging by the pedigrees of their animals, perfectly willing to ignore the family in their efforts to produce superior excellence in the individual by hap-hazard crossing. All crossing of diverse strains is hap-hazard. No one can tell how the cross will "knick." To be sure, the crossing of two totally distinct strains of blood, especially if they have strong good points which are inherited, almost always results favorably in the first generation. And the fact that still better results are usually gained by breeding the second generation back to the first, provided there is a fair foundation of constitutional vigor, indicates too clearly to be overlooked that great success in the future will be gained by breeding families.

Fig. 4.

What is a family? I regard it as a group of animals of closely related blood, and having similar characteristics. The animals look alike, possess similar qualities, have similar dispositions, and have similar constitutional tendencies. Of course the closer a family is bred the more these similarities prevail, and the more surely will they be propagated. In breeding neat stock and studying pedigrees, with reference to families, we encounter on the threshold a problem for which I have never met a solution: Which is the most potent, the in-

Fig. 5.—TIE COMPLETE.

fluence of the sire or that of the dam? The practice of Shorthorn breeders, if I interpret it aright, as well as that of Devon and Ayrshire breeders, is not to regard blood, no matter what the proportion may be, as admitting an animal to the distinctive *name* of the family unless it comes in the direct dam's line; and yet, every animal in the direct line is regarded as in and of the family. A "Constance," with say four "Duke" top crosses, although this would show that she has $^{15}/_{16}$ths Duchess blood, is not a Duchess and never can be. Yet she may have many or all the characteristics of the family.

Is this distinction well grounded? or is this way of considering animals as belonging to a certain family, because that is the line of their dams, erroneous and misleading?

I do not know that any man is wise enough to answer the question. It seems as if the blood of either parent ought to be potent in exact proportion to the closeness of its breeding. Among the Jerseys, for instance, we have what is called a pure "Alphea," that is an animal going back on every line to Alphea and Jupiter, her own brother—of course to Saturn and Rea, the parents of both. Now the question is, as brought down to practice, will a bull which has such a pedigree, crossed upon a cow of another family, or no family, impress his progeny with Alphea characteristics, more than a cow of the Alphea family with no out-cross, paired with a bull which is an entire "out-cross."

I think it is not too much to say that this very important question has never been answered. There are certain Jersey breeders, at any rate, who may, by a few experiments, settle this question permanently. They will do the country, and the world, a great service if they will. One man has a cow, another has a bull—a few have both adapted to test this. It is earnestly to be hoped that they will co-operate for the solution of the problem.

Cost of Raising a Milch Cow.

I have received the following note from "A Subscriber to the Agriculturist": "I declined to accept an Alderney calf of three months for the reason that there was no pasture ground on my four acres of country home. My neighbor says that the milk of two years will more than pay for the cost of fodder during the three years of minority, which I doubt. Can you give information as to the cost of raising a calf to maturity or maternity when all the food is purchased?"

This is a question upon which I would be very glad to have the results of the experience of other readers and subscribers to the *American Agriculturist*, but will briefly discuss the subject here. A calf at three or four days old is worth about a dollar. If it be kept until it is six weeks old, and fit for veal, it will consume six quarts of milk a day at least, and probably some oil-meal or corn-meal porridge besides. If milk is worth 3 cents a quart on the farm, that will be 18 cents a day for 42 days, and will amount to $7.56. To this add $1.00, the original value of the calf, and 50 cents, the cost of the meal used to supplement the milk it would have if it sucked the cow, and we have $9.06 as the actual cost of the calf at six to seven weeks old, which is quite as much or a little more than it would bring if sold for veal. The profit of this transaction is only in making a market for milk at 3 cents a quart. We can raise calves, however, and even fatten them for veal, and make pretty good veal too, and feed only skim-milk, adding oil-meal, oat-meal, or Indian-meal—or best a mixture, in the form of well-cooked porridge. I calculate that this system is good enough for calves that we are going to raise, though I would not want to be set down as saying that a calf for veal ought to be fed better than one to be raised to maturity. My point is this: If we are going to raise the calf, it is turned into a paddock and has a free run a good part of each day; thus it can never become fat, and it is able to do well upon, and thoroughly to digest and profit by different food from a veal calf. We will say it receives six quarts of skim-milk a day, at a cost of 1 cent a quart, and that besides this it gets meal to the amount of 1½ cent a day, 7½ cents a day for 42 days being the cost of feeding. This makes, adding the $1.00 original value, $4.15 as the cost of the calf at six to seven weeks old. If moderately fat, it will sell for $7.00 or $8.00, so we make a gain of some three dollars, besides the butter of 292 quarts of milk. I dispose of several calves a year in this way, and it often happens that the butchers or market men decline point blank to believe that they have never sucked—and my calves never do suck a single day.

Fig. 1.—THE BENT AXLE.

Now to raise the calf from this point is the rub. If we must buy all the feed and give it all it will eat, it will cost 15 cents a day for one year, or $54.75, or say $50.00 as the cost of a yearling. This is more than it is worth three times over, unless it be of remarkable blood and can be readily sold for that or for more, which is not likely. If we want to buy we shall probably have to pay as much as that, and it may be the calf or yearling we want will be cheap at $100.00; but if we must sell we will find it very different. If the cost of feeding for the first year is $50, that of the next year will be $60 to $65, and the cost of the heifer, when she is ready to calve, will be as follows:

Cost to the end of the first year	$ 50.00
Cost of bull service	5.00
Cost of keep to the end of the second year	60.00
	$115.00

This is of course much more than a first-rate heifer can be bought for in the dearest market in this country. She will do exceedingly well if she yields 10 quarts of milk a day on an average for six months, making 1,800 quarts, and 4 quarts a day for the rest of the year, making 720 quarts, or 2,520 quarts in all. If this can be sold for 6 cents a quart, it will bring in $151.20. The keep of the cow will be not less than 20 cents a day, or $73.00, which, being deducted, leaves $78.20 as the net earnings to be set off against the $115.00 which the cow cost.

2.—THE SHAFTS.

We must not forget that not one heifer in ten does as well as this, and also that not one heifer in a hundred costs so much at her first calving. Most people who want to raise a heifer can hire pasturage for young stock at about 25 cents a week. This will make a great deduction in the cost, namely of $43.50. The heifer therefore would cost, if pastured six months in each year as proposed, only $71.50, and if she should give the same amount of milk which we figured upon, and it could be disposed of to the same advantage, the milk of one year, to say nothing of the calf, would not only pay the cost of raising the animal, but give a net profit of $6.70.

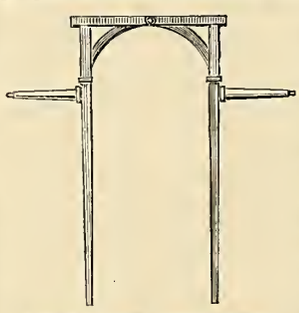


Fig. 3.—AXLE AND SHAFTS.

"Figures don't lie," but they do deceive wofully sometimes, and if anybody tries to carry out these results he will probably be disappointed. There are, however, thousands of two-year-old heifers which, if fed at a cost of 20 cents a day, would yield ten quarts of milk for six months.

It is a great satisfaction to have a nice heifer of one's own raising, which the daughter of the house has petted day after day, which the children have adorned with garlands of daisies, and one which is as gentle as a cosset lamb; so if the raiser will charge $75 or $100, to satisfaction, and credit the heifer with the same sum, the balance on the final trial will be found in favor of the pet heifer of the family.

Fig. 4.

Hints and Helps for Farmers.

A PORTABLE FEED BARREL.—"Subscriber," L. I., sends a description of a Feed Barrel on wheels which he has used for a number of years, and claims "is the handiest thing I have on the place." An old buggy axle and wheels were taken as the basis, or running gear. The axle was taken to the blacksmith and bent into the form shown in figure 1. Shafts, fig. 2, were then placed on the axle and

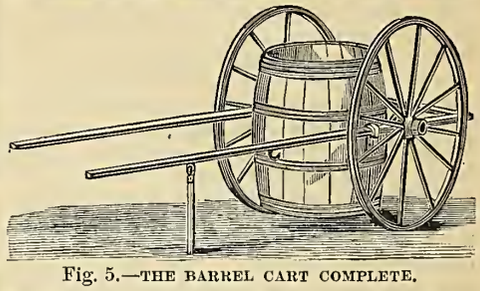


Fig. 5.—THE BARREL CART COMPLETE.

fastened behind with a bolt, at each side, with an axle clip, fig. 3. An old pork barrel was furnished with two hooks, placed on the sides just above the center, as shown in figure 4. The shafts being passed through under these hooks, the affair is complete as in figure 5. "You can unload the barrel by throwing up the handles when the water or feed will run out, or you can slip the barrel off and take another empty one. I have three such barrels, two for swill, and one for water for cattle or the garden." The shafts may be held up by a leg.

A MACHINE FASTENER.—In a talk with an ingenious farmer the other day, we asked him if he had any way of securing his fanning mill, corn sheller, or other similar machines, to the barn floor. The method employed by him, is as follows: By means of two screws, a strap of iron (with the lower end turned up to form a hook), is fastened to the lower end of the legs of the mill, as shown in the engraving. When the machine is put in its proper place, it is secured in its position, by driving a staple of flat iron, *a*, with chisel points, over the hooked end of the iron, that is, upon the leg of the machine.

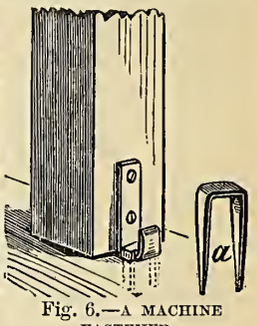


Fig. 6.—A MACHINE FASTENER.

A TURNIP PULLER.—"Old Subscriber," Long Island, send a sketch of a Turnip Puller, shown in

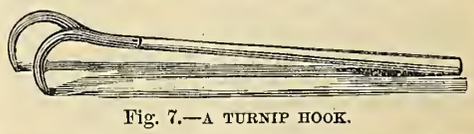


Fig. 7.—A TURNIP HOOK.

figure 7. It consists of a double or pronged hook fastened to a long handle like an ordinary hoe. With it the person can stand erect and work rapidly and with comparative ease. "It will not cut or injure the turnips in the least. Once used one would never pull turnips by hand again."

A RAIL HOLDER.—"J. C. W," Cromwell, Conn., is so much pleased with a Rail Holder that he has used for some time, that he sends a sketch of it

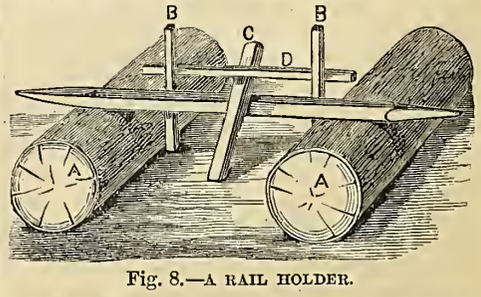


Fig. 8.—A RAIL HOLDER.

for the benefit of our readers who may have rails to sharpen. The rail is laid on chopping blocks, or logs, *A*, *A* (fig. 8), and held in place by three stakes, two

of them, *B*, *B*, abont four feet long, and are driven firmly into the ground, four feet apart, alongside of the rail. The other stake, *C*, is driven between these two, and in a slanting direction. A lock-stick, *D*, is placed above *C*, resting against the posts, *B*, *B*, by means of which the rail is held firmly in place. When the rail is to be removed, lift out the bar, *D*, withdraw the stake, *C*, and the rail is loose and ready to be taken out.

A Safe Gate Latch.—"T. J. M.," sends a sketch of a gate latch, (figs. 9 and 10), which he has had in use for some years. It is very simple and is safe, as it cannot be pushed back without lifting, cannot be shaken loose by the wind rattling the gate, nor rubbed open by cattle or horses.

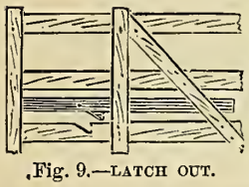


Fig. 9.—LATCH OUT.

A Home-made Level.—The accompanying engraving shows a level made by L. W. Smith, Luzerne Co., Pa., to whom we are indebted for a sketch and description. It consists of two pieces of glass tubing each about 5½ feet in length, fastened to registered strips of board, the whole resembling great thermometers. The lower ends of these two parts are connected by rubber tubing of any desired length. The whole is then filled with water up to the middle of the glass tubes. The figure represents the level placed on the top of two brick pillars. The hight of the column of water in the left-hand tube, as read off on the graduated scale is 4.10 feet, that in the right-hand tube is 0.80 ft. therefore the right hand pillar is 3.30 ft. higher than the left hand one. With this instrument the foundations of houses may be made exactly level.

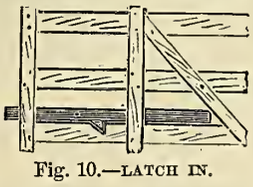


Fig. 10.—LATCH IN.

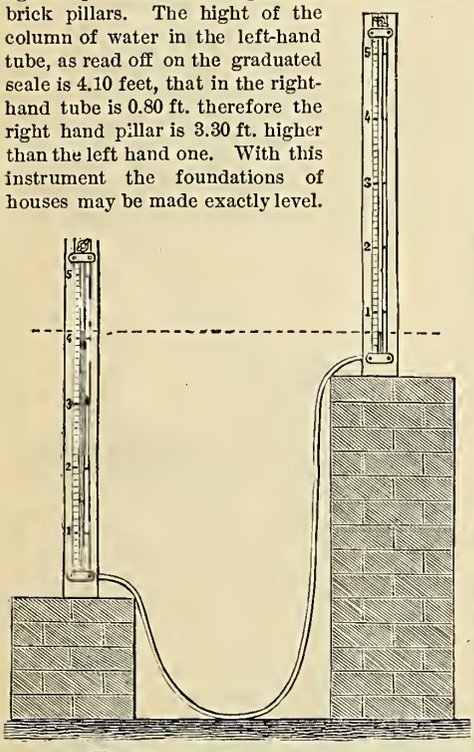


Fig. 11.—A HOME-MADE LEVEL.

It will also be of use in arranging mill shafting, laying long beams, floors of buildings, etc., etc."

"Weathering."—This term is often used among farmers, and is certainly a good one, as it expresses as much of the nature of the process as can be contained in a single word. When land is left without a crop, and is exposed to the action of the air and sunshine, the winds and rains, frosts and other natural agencies by which the original rocks, through long years, have been converted into rich soil, we say that it is "weathering." In other words, there is no crop to take up the nourishment as it is formed in the soil, and there is therefore an accumulation of these food materials in the soil, and it gradually improves by the process. The throwing up of the soil into ridges in the autumn, that there may be a greater surface exposed to the weather, is an instance of winter "weathering," while fallows are the more common instances of "weathering" during the summer.

A Spring Pen-Stock.

"T. S. B.," Schuyler County, N. Y., sends sketch and description of a method he has adopted for conducting water from a spring to a trough in the barn-yard. He writes as follows: "Having occasion to drain off a piece of flat land.

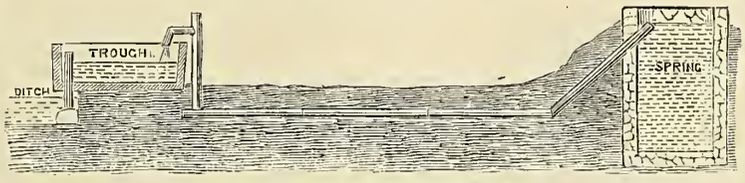


DIAGRAM OF SPRING PEN-STOCK.

overflowed from a spring, I dug a ditch from the spring which ended within a short distance of my barn. Before closing the ditch the thought struck me that I might provide for a constant supply of water for the stock in the barn-yard. I found the land so level that it would barely admit of getting the water into a trough above ground. I concluded to dig out the spring to a fair size and sufficiently deep to prevent the waste of water, and laid it up in cement, the water being allowed to escape only at the top. In the meantime I procured pump-logs to reach to the barn. The end of one of the logs was cemented near the top of the spring and connected with the others, which were laid, with a slight decline, to the pen-stocks in the barn-yard, as shown in the accompanying engraving. To prevent the overflow from the pen-stock from making a wet place in the yard, a hole was bored in the bottom of the trough and a pipe inserted, the upper end of which reached nearly to the top of the trough. The excess of water thus flows off and directly into a closed drain below. I have a full supply of water, brought over a nearly level field, and no water standing around the trough in the yard. A screen of fine wire should be placed over the end of the log at the spring, to keep out the mice that might otherwise get in."

What is the Best Material for Drains?

The very best material for drains is not yet discovered; certainly it is not yet thoroughly tested. Many things have been tried in draining, both in this country and in the British Isles, that have failed. Rails, brush, plank, and cobble-stones will not make a permanent drain. Wood rots in time, and stone, without a culvert at the bottom, soon clogs, and the work has to be done over again. The common clay or brick tiles, now so generally used in this country, where draining has been introduced, answer a very good purpose where every tile is thoroughly burned and laid below frost. We have noticed recently in a pile of these tiles left over from a job of draining, finished several years ago, that they have crumbled more or less where they have been exposed to the weather. At the outlet of drains where the water does not run continually, the tile is disintegrated after a while, and becomes unserviceable. That waste which goes on at the mouth of the drain takes place more slowly under the soil, but it is only a question of time when some of the softer will crumble, and the water-duct will be clogged. To make a drain as lasting as the soil itself, we want something harder than brick, and, if possible, lighter. One great drawback to the use of brick tiles is the great expense of transportation. Glazed pottery tile, hard burned, made of fire-clay, or the poorer kind of potter's clay, affords a tile that is practically indestructible, and much lighter than the common brick tile. It costs a little more to manufacture, but is sold at the same price. When the lessened cost of transportation is considered, the glazed tile comes much cheaper to the consumer. These tiles are made in Ohio, and shipped to Boston, and sell in competition with the common brick tile. Of course they can be made profitably in any place where the raw material exists, if there is a demand for them. The objection which arises from their impervious character is found to be no objection at all in actual use. Water enters the drain at the joints altogether, as it does mainly in the common brick-tile drain. The only advantage of the porous brick tile would be in soils so wet as to keep the drains always full of running water. The remedy for this would be to bring the drains closer together. The great advantage in the use of this glazed tile is that every tile is perfect, and practically indestructible by the action of water, or of such freezing as occurs three feet below the surface. A field thus drained would be a permanent investment for all coming generations. This material of which glazed ware is made, though as durable as any, may not possibly be the cheapest for the manufacture of tiles. A glass tile made of the impure silex from which common black bottles are made, would be thinner and lighter than the glazed ware, and would be quite as indestructible. The sea-shore is an inexhaustible storehouse of sand, and it is very widely distributed in all granite regions. In this connection we have thought of the slag drawn off from the furnaces in a molten state, which is now mostly an encumbrance. If this could be run into proper molds as it is drawn from the furnace, it would utilize a generally worthless material, and make a tile as light and durable as glazed ware. C.

A Smoke House and Ash Pit.

For an ordinary farmer's family a smoke house six feet square inside is large enough. If there is danger of frost heaving the walls, four oak or cedar fence posts may be hewed and halved together, to be partly bedded in the ground and to support the superstructure of bricks. Upon these foundation sills put walls seven feet high, capped with plates of two-inch planks. The rafters, set 14 inches apart, are notched into these and nailed to a ridge-pole supported by the brick gables. Thus there is no tendeney to spread even if heavily loaded. The Ventilator in the roof is more for ornament than use. Hooks in the rafters support the meat.

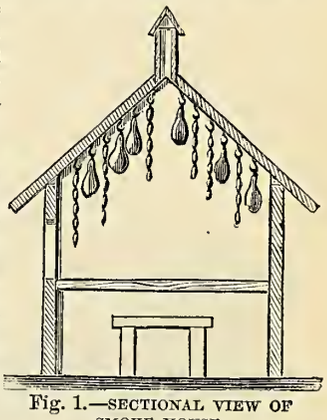


Fig. 1.—SECTIONAL VIEW OF SMOKE HOUSE.

A wall two and a half feet high is placed across the smoke house inside, dividing the space, so as to make an ash pit four feet wide. This low wall is also capped by a plank, which should be built into the side walls. This forms a convenient standing place for hanging the hams. The door may be in the middle or at the side, the fire-place is set in the narrow entrance space. A flat stone, supported by two brick piers, makes as good a fire-place as anybody needs for smoking the meat hung to the roof above.

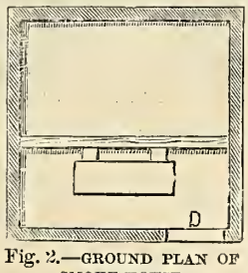


Fig. 2.—GROUND PLAN OF SMOKE HOUSE.

Overfeeding for the Fairs.—The practice of stuffing animals for a number of weeks and even months, for the sake of making them over fat and out of proportions for the Fair, is not only

a foolish but a ruinous one. One has but to point out the destruction that has resulted from this overfeeding in the famous Bates' and Booth's Shorthorn cattle, to show that a practice that will so deform and derange the animal as to render it either unfit or unable to propagate its kind, is wholly wrong and to be deprecated in the strongest terms. Judges at our Fairs should understand this matter and lend their whole influence to the side of a fair reasonable feeding and preparation for the Fair. Anything that is stimulated to an unnatural development should be considered only in the light of a monstrosity, and hold no place among animals that are competing for a prize upon the merits which they possess. The descendants of prize stock should be the best stock; but too often those who have bought prize animals have had only to regret it, because they were injured by overfeeding and took their prizes on artificial points, which were not heriditary, and they were therefore not able to transmit them to their offspring.

Drawing Corn in the Shock.

It is frequently convenient to clear the corn-field soon after cutting, so that the ground may be plowed for wheat, or that the stock may be turned into an adjoining meadow, between which and the corn there is no fence. With their removal in view, the shocks should be made small and be firmly bound. It is best to use a wagon with a low, flat and wide "rigging," like that shown in fig. 1. This "rig" is made of four pieces of scantling, and four long, wide boards, put together as shown in the engraving. The wagon-reach should be let out more, and the rigging made longer than the one shown in fig. 1, in order to give more space between the wheels, an arrangement which will be found to be better. The method of raising the shocks upon the wagon is shown in figure 2. Three men are required for the most rapid and consequently the most economical loading of the corn. The wagon is driven quite close to the corn, and the man on the wagon throws a rope-noose over the top of the shock and draws it towards the wagon. At the same time the two "lifters" place a light, stout pole under the shock and lift it up, simultaneously swinging the butt of the shock out, away from the side-board of the rigging. One shock is placed lengthwise between the hind wheels, and the same at the forward end, after which the shocks are built up in the middle. The load will not be high, both because it will be heavy enough without, and for the reason that it is not economy of labor to lift the heavy corn higher than is necessary to load it.

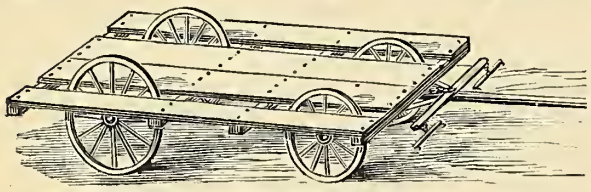


Fig. 1.—RIGGING FOR DRAWING CORN IN THE SHOCK.

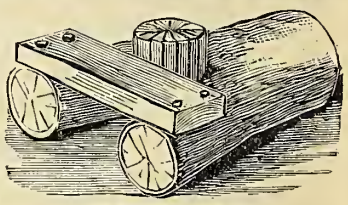
Fig. 2.—METHOD OF LOADING THE SHOCKS OF CORN.

Large Turkeys for Breeding Stock.

The common practice of breeding only from second brood turkeys, and those that are not fit to kill at New Year's, is a very short-sighted policy. In nothing will a good selection pay better than in breeding this noble bird. In the wild state where "the survival of the fittest" is the rule, gobblers weighing 40 pounds are not infrequent, and some are upon record weighing 50 pounds. The prevailing custom of breeding from the smallest and cheapest, keeps our markets full of birds that do not weigh more than eight or ten pounds. The birds that are known in the Boston and Providence markets as Rhode Island turkeys, run at least a third larger, and lots of dressed gobblers averaging twenty pounds can be furnished by the dealers at New Year's or later on very short notice. We know of one breeder who killed four adult gobblers last year that weighed, dressed, 126 lbs., or 31½ each. In all the districts from which these supplies are drawn, the farmers have found that it pays to take extra pains with the turkey crop. There has been a steady gain in the average weight of the flocks sent to market at the three great festivals for the last twenty years, and the limit of perfection in this bird has by no means been reached. A large bronze gobbler, the offspring of a pair weighing 62 lbs., that took the premium at the New York State Poultry Show, was brought into Eastern Connecticut three years ago, and three large flocks have been raised from him, and nearly all of them have been sold for breeding stock. The unanimous testimony of breeders even in this district where large turkeys are common, is that their flocks have been greatly increased in size by this stock. Suppose there is only a gain of two pounds in the average size of a flock of one hundred birds, it makes a differenec of two hundred pounds, worth forty dollars at the present price of poultry in Eastern markets. This is nearly all profit, for the turkeys get the most of their growth in the pastures and woods, and are only fed freely six weeks before marketing. Why then do not farmers generally invest in better stock. The chief reason probably is the cost of the stock. It seems a large price to pay five, ten, or twenty dollars for a gobbler of extra weight, or for a hen weighing 15 to 20 lbs., though such a pair of birds would leave their mark upon the broods of a whole neighborhood, and add thousands of dollars to the value of the annual sales for years to come. The breeder of fine stock graduates the price of his birds principally according to their rapid development and weight. They will vary in weight quite a good deal even in the purest bred flocks. Gobblers weighing 18 to 19 lbs. in December are common; a quarter of the flock may reach 20 to 21 lbs., and a few may add a pound or two to these figures. The extra price asked for the last two or three pounds seems unreasonable, and yet it is the cheapest part of the bird, for it is this which shows his better constitution and aptness to take on flesh and fatten. It is the same principle applied to poultry which has given such wonderful results in the breeding of Shorthorn cattle. The large, well-shaped gobbler, beautifully marked, and bred to hens of similar quality, will give you birds of good, strong constitution that will develop rapidly and make the most flesh out of a given amount of food. The cheapest bird we ever bought was a young gobbler of this character, for which we paid twenty-five dollars. Scores of flocks and thousands of birds have descended from him, and he has left his good qualities upon every one of them, so far as our observation has extended. A seven months' bird of 3 or 4 lbs. extra weight is quite sure to make a 30-lb. yearling, and such a yearling gobbler is worth twenty dollars in any breeder's flock that understands his business. There is no bird among all our fowls more susceptible of improvement. *

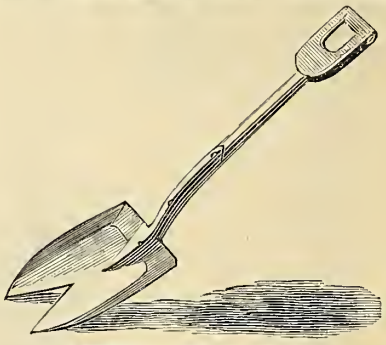
Holder for Fire Wood

The accompanying engraving represents a contrivance for holding the blocks of fire-wood while they are being split. The bolder is made from a fork of a tree, such as may be easily selected while one is chopping in the woods. A heavy piece of bard-wood plank is spiked upon the sawed ends of the forks. This forms an inclosed space, into which the block to be split is placed, and is there firmly held in an upright position until all the necessary divisions are made. A simple holder of this kind, if well made and stout, will last for several seasons, and save much stooping over and picking up of separate sticks while splitting the family fire-wood.



A FIRE-WOOD HOLDER.

A Cabbage Cutter.—Mr. "J. H. S.," Erie Co., Pa., sends a description of a Cabbage Cutter which he has made, and used with great satisfaction. An old cast-off shovel was taken and a triangular piece cut out of the blade, as shown below. The V-shaped edge was then ground sharp and the implement was ready for use. "With one stroke the cabbage is severed from the stump, ready to be thrown into the wagon." Mr. S. says there is no patent on this Cutter, and all are free to make it.



A SHOVEL CABBAGE CUTTER.

Turnip Experiments.—It is certainly monotonous to grow the same crop on the same field for twenty or thirty years, but it is only in such monotony that satisfactory answers can be obtained to some of the most important questions in agricultural practice. It is in the fact that Dr. Lawes has conducted experiments with several different crops upon the same plots for such a long series of years, and with great care, that the deductions coming from his work are of such value. The recent statement in regard to his turnip experiments are in point. He says:—"In 1845 the land taken into turnip experiments at Rothamsted, and manured with superphosphate of lime, gave 14 tons per acre of bulbs and 4 tons of leaves. It has been under experiments ever since, but no succeeding crop has been so large, and at the present time a full supply of potash, superphosphate, and other mineral manures, will not produce more than 4 or 5 tons of roots to the acre. It is therefore evident that at Rothamsted the stores of fertility accumulated in the land before the experiments were commenced have been exhausted."

A Corn-Husking Bench.

A convenient bench to hold the corn while husking, is shown in figure 1. It consists of two poles of hard-wood, seven feet in length, to which legs

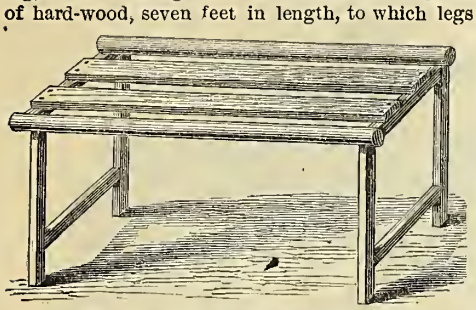


Fig. 1.—A CORN-HUSKING TABLE.

are attached by means of auger holes and wedges. The bench should stand about two and a half feet high, be well braced, and covered with thin boards as shown in the engraving. To load the shock the bench is turned down on its side, as in fig. 2, when the shock is grasped near the top, and the bench, with the shock, tipped back into an upright position again. Figure 3 shows the corn ready for the husker, who can stand at his work. A farmer who has used one of these benches will not return to the

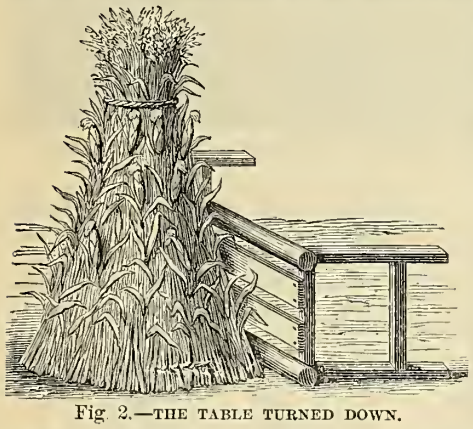


Fig. 2.—THE TABLE TURNED DOWN.

old cramped method of husking upon the knees. Besides in muddy weather there is a great saving of fodder that would otherwise be badly soiled.

American Natural Cements.

An interesting paper on American Natural Cements was read by Mr. F. O. Norton at the recent convention of the American Society of Civil Engineers, from which we select and condense the following: The principal deposit of magnesian lime-stone, valuable as a cement—occurs in Rosedale, Ulster Co., N. Y. This Rosedale cement first came into use in 1823 in the construction of the

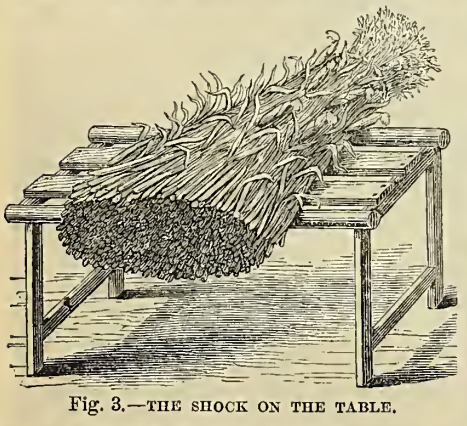


Fig. 3.—THE SHOCK ON THE TABLE.

masonry of the locks, etc., of the Delaware and Hudson Canal. At the present time there is between a million and a million and a half barrels of this cement made and used each season. Rosedale cement develops great hydraulic energy in twenty-four hours after being mixed with water, and is at that time equal to the English Portland. After the first day, the Portland gains rapidly upon the Rosedale up to the seventh day, when the difference between the two is the greatest. At the end of a month the strength of the Rosedale approaches quite nearly to that of the Portland, and the difference is continually reduced thereafter. In practice, these cements are not used pure, but are mixed with a large or small per cent of sand, which reduces the strength of the mixture in the following manner: One part of sand gives mortar one-half as strong as the pure cement; two parts, one-third as strong; three parts, one-fourth; four parts, one-fifth; five parts, one-sixth. With the Rosedale, the reduction when mixed with sand is somewhat less than in the case of the Portland. The strength of Portland cement mortar, one of cement to two of sand, at the end of six months is 224 pounds to the square inch. The Rosedale in the proportion of one of cement to one of sand at the end of the same time is 257 pounds to the square inch. This being the case, it is shown that the mortar of the Rosedale, equal parts of cement and sand, is 34 pounds to the square inch stronger than the foreign cement, used in the proportion of one to two, and 54 cents per barrel less expensive. The last question is whether the Rosedale, one to one, is strong enough for all practical purposes to which a cement is applied. All the important masonry in America for the last fifty years has been laid in the American cement, and the fact that it has given perfect satisfaction for light-houses and culverts, sewers and bridges, in the water and out of it, shows that it meets all the cases where a good, strong, cheap, and lasting cement is required.

An Archway Shelter Through the Straw Stack.

With winter comes the piercing winds, the intense cold, and, unless well protected, the greatest suffering that the farm animals experience during the whole year. It is the season when to keep the stock warm is no less a matter of economy than to keep them well fed; in fact, they are fed in a great measure to keep up the animal heat, the food serving much the same end that coal does to the furnace. This being true, it is reasonable to infer that an animal will require less food to maintain the proper temperature of the body were it warmed in part by other means. The inference is a true one, as thousands of experiments show—in fact, it goes without questioning that farm stock, when sheltered from the cold of winter, require a considerable less food to keep them in a good, thriving condition, than do those animals that are continually exposed to the weather. Shelter then has much more in its favor than simply the humane side, which alone is enough to warrant the comfortable protection of animals. There is an appeal to the pocket as well as the sympathy in the lowing of the shivering herd. All farmers, and especially those in the newer portions of the West, do not have stables for their cattle or snug sheds for their sheep. They are called upon to make the winter as comfortable as possible for their animals, with the limited means at their command. Sheds of poles with roofs of straw are extensively used and with profit. Not long ago we saw an archway shelter, under, or through a straw stack that was evidently an inexpensive and valuable device for stock protection.

The "ground plan" is given in fig. 1, and consists of two rail pens, of the ordinary sort for the bottoms of small stacks, placed near enough together so that an archway of poles could be made between them in the manner shown in the engraving. The lower end of each pole was set a short distance in the ground, rested near the middle on the top rail of the pen, and crossed with its neighbor pole from the other pen, and was fastened to it with wire at the top and also to the rider. Over this structure the straw stack was built, and when finished had the appearance shown in fig. 2. In this way a snug shelter of considerable size was made beneath the stack under which the cattle gladly took refuge in stormy weather. The structure is a permanent one, the rails and poles re-

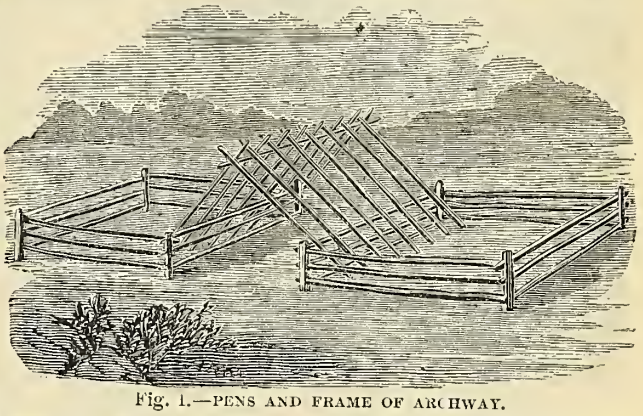


Fig. 1.—PENS AND FRAME OF ARCHWAY.

maining if necessary from year to year, or if taken down, to be rearranged again in a short time just before the thrashing is done. Such an archway shelter would not be out of keeping in many a well-kept barn-yard. If the stack is a long one a double archway may be made, and each will save many steps in doing the work of the barn-yard.

Well Seasoned Fuel.

Most farmers use wood for fuel, and the best time to chop, haul, prepare, and pack it under cover, is in the comparative leisure of the winter months. There are several reasons for this. One good reason is enough, but we have four. It is a great saving of fuel. By drying the wood, most of the water is expelled, and there is little loss of heat in drying it as it burns. It costs about $2 to work up a cord of wood for the stove after it is hauled to the wood pile, and it makes a difference that any one can calculate, whether a cord of wood

Fig. 2.—THE ARCHWAY UNDER THE STACK COMPLETE.

burned green, lasts twenty days, or burned dry, lasts thirty days. The use of well-seasoned fuel makes a large saving of time and labor, and on this score alone it pays to always have dry wood. It is a long job to light a fire with green wood, even with the help of paper and shavings. This work has to be done in the morning, when time is most valuable, either for sleep or in getting an early start for the the work of the day. It is about an hour before the green wood gets dry enough to burn, and the fire ready for cooking the breakfast, warming the room, or both, a delay which is not at all satisfactory to any one. The wife or housemaid may be tempted to use kerosene to start the fire, and

too often gets severely burned, if not killed. The loss of an hour every morning, with hired men waiting for breakfast, makes a big figure in the course of a year. Look at it. Then the habit of preparing a year's stock of fuel in the cold months cultivates forecast, and is in keeping with other good habits, such as preparing for seed sowing, getting tools in order, cultivating and harvesting, all in due season. These things tell in the bank account. And lastly, dry fuel has an intimate connection with the serenity of temper and happiness of the household.

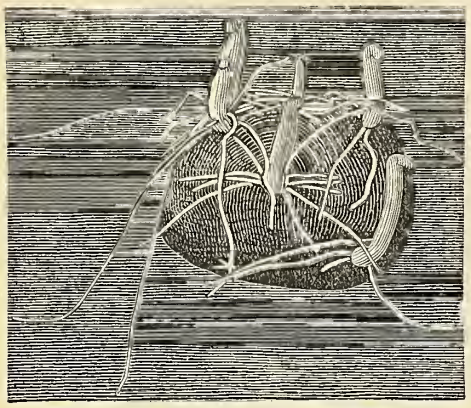


Fig. 1.—FIRST ROOTS OF POTATO PLANT.

It makes all the difference in the world with one personally, whether the woman who sits opposite him at the table, pouring tea and coffee, is made a spitfire by her daily tussle with sissing firebrands and soggy wood, or a saint by the use of seasoned fuel. It makes a great difference with the children and the servants. We are sceptical on some points, but have full faith in the use of dry fuel as a means of grace. It is not often the theme of pulpit discussion, so we drop a word here at the hearthstones of our readers: Remember there is a limit to "the patience of the saints," and burn dry fuel.

The Roots of the Irish Potato.

Last month, page 344, Professor Atwater gave our readers a short chapter on the roots of the Indian corn, accompanied by a series of illustrations, engraved from photographs taken by a German investigator, Dr. Thiel. We here show four different stages in the growth of the roots of the potato plant, by engravings taken from the same source. These illustrations, being from nature, show as accurately as can be, the position, number, etc., of the roots of the potato plant. Figure 1 represents a potato that has been in the soil long enough to have the young stems well started, and the slender roots growing from their bases. In fig. 2 the roots have greatly increased in number and

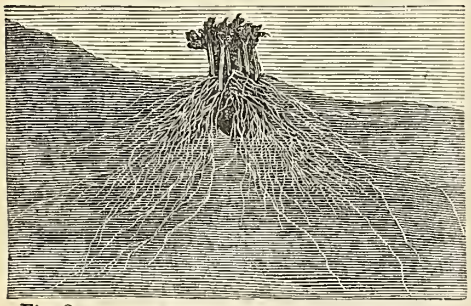


Fig. 2.—YOUNG POTATO PLANT WELL ROOTED.

length, filling the soil with a network of fibres. Figure 3 gives a later stage of the potato plant, the photograph being obtained by first removing the soil from one side of the plant with great care, to not either break or displace the roots, and then photographing the plant, with the parts thus exposed. It will be seen that the roots are long, slender and very abundant, extending over a much greater area than the tops. The last stage, shown in fig. 4, gives the potato plant after it has finished its growth. The tops having completed their growth are comperatively leafless; the new potatoes are full grown and in a cluster upon short underground stems, at the base of the plant, and the fibrous roots, having fulfilled their office, have mostly disappeared, only the larger ones showing in the photograph. The whole economy of the life of the potato is here shown. In the first place we have the tuber, the old potato, a store-house of starch and other nutritive material. When placed under proper conditions, the nutritive matter within the potato is expended in producing stems and roots—that is in establishing new plants, which are soon able to take up their food from the soil through the numerous fibrous roots. These contribute to an abundant growth of tops or vines—the above ground part of the plant. When the vines are sufficiently developed, they make preparations for continuing their kind; at their base, there start several underground stems—not roots in any sense, but as much stems as those above ground, but having no need of leaves they are leafless. Soon these stems swell at the end, from the deposition of starch and other nutriment prepared by the foliage; this deposit continues, the end of the stem is enlarged by its accumulation, and finally we have a cluster of ripe potatoes like the one with which we started.

Fig. 3.—ROOTS OF THE POTATO PLANT AT TIME OF MOST VIGOROUS GROWTH.

Liquid Manure.

One of the most successful gardeners we know of, uses liquid manure largely. He has a large tub, a discarded whale-oil cask or sugar hogshead will do, holding several barrels, sunk partly in the earth, near the middle of his vegetable garden. He has a cheap trough, made by nailing two four-inch strips together in the shape of a V, to conduct the water from his sink spout into the tub, whenever it is needed. It is not far from the well, and extra water is run from the pump into the tub, whenever it is needed. Into this tub all the slops from the chambers are emptied during the summer. Another line of cheap troughs conducts the liquid manure from the tub to any desired part of the garden. With a long-handled dipper, he stands at the tub, and waters the growing vegetables, and fruit trees, as their wants demand. He always has fine fruits and vegetables. When a house stands several feet higher than the garden, the tub or vat for holding the liquid manure can be kept wholly above ground, and the water be drawn off by a plug at the bottom of the vat. This will save the labor of dipping. The results of using liquid manure upon growing vegetables are quite astonishing. If the garden is large, and the wastes of the house are not sufficient, it is easy to increase its quantity by placing a few pounds of guano in the vat, and adding water from the well or cistern. The water should have the benefit of one day's sun, and be applied just at evening, or very early in the morning.

How to Feed Beans.—Beans, it is well known, form one of the most nourishing articles of diet that comes to the table, and the regular weekly appearance of the baked beans, generally on Sunday in New England homes, attests the high appreciation in which they are held. Beans are much more used in this country for human food than for our domestic animals. They do not take to them kindly, with the exception of sheep, which are very fond of them and their pods and stalks also. Villagers and farmers often have small lots left over from the winter stores, and are in doubt how to dispose of them. Pigs, hens, and cows will not refuse them if mixed with other food. The best method of disposing of old beans is to boil them until they are sufficiently soft, and then mix them with scalded Indian meal, or other provender, and use the mash for feeding pigs and poultry. They are excellent to make flesh and eggs; and, in this shape, the last remnants of the bean bag may be turned to profit in the pig-pen or poultry-house.

Fig. 4.—POTATO PLANT NEAR THE CLOSE OF THE SEASON.

The Striped Blister-Beetle.

The advent of *the* Potato-beetle (*Doryphora*), seems to have driven out of mind the fact that we have always had potato-beetles, and in some years in respectable abundance. There are several species of the genus *Lytta* that infest the potato and kindred plants. These insects are related to the European Blister-beetle, known as the Spanish Fly or Cantharides, and are said to possess similar blistering properties, although they have never come into general use as a vescicating agent. During the present season we have received numbers of potato insects to be named, all being the Striped Blister-beetle (*Lytta vittata*); this seems to have been especially abundant throughout the Middle States, in some cases proving quite as destructive as *the* "potato-bug," as it destroyed all the foliage, and that could do no more. But this Blister-beetle, unlike the other, is most destructive in its perfect or beetle state; indeed but little is known of the larval or grub state of this insect, beyond the fact that it passes its existence in the earth and probably feeds upon small roots. The engraving shows the general form of these Blister-beetles; some are black throughout, others are gray, one has a light margin to its wing cases, while this one has both a marginal and a slender central stripe on each wing case; the colors being light-yellow and black. These insects may be poisoned with Paris Green and London Purple, but it does not seem to be so effective with these as with the regular potato-beetle.

STRIPED BLISTER-BEETLE.

The best method of disposing of them, when they are abundant, is to drive them from the field. A windrow of straw or litter being placed at one side of the field, several persons, each armed with a leafy brush, march through the field abreast, beating the vines as they go. Though the insect can fly, it prefers, especially after a full feed, to walk, and if the driving be not too rapid, nearly all the insects in the field can be made to take up their march toward the windrow. If the operation is carefully performed, nearly the whole number of insects may be made to collect in the straw as a resting place, which is then to be fired; thus large numbers of them may be destroyed without the use of poison. A repetition of this operation will so clear a field of the insects that the few which remain will not be notably destructive. Should the other species occur at any time, a similar treatment will be found effective for them. It is said that this insect prefers all other varieties of the potato to the Peachblow, and that they will not touch the vines of that if any others are in the neighborhood.

THE PURPLE CONE-FLOWER (*Echinacea purpurea*).

The Purple Cone-Flower.

Much nonsense has been written about prairie flowers. The majority of the flowers of our western prairies are coarse and belong mostly to the Family of the Sunflower and, like that, are in a large majority yellow. Most of the Cone-flowers (*Rudbeckia*) are yellow, but there are two purple ones separated from *Rudbeckia* and placed in a separate genus, *Echinacea*, a name which has reference to the hedge-hog character of the disk of the flower. The engraving shows the flowers of nearly the natural size; the center of the flower at first is rounded, but soon becomes pyramidal and pointed. This portion is of a dark maroon color, while the rays are of a light rose purple. The general aspect of the plant is that of the Rudbeckias. It forms a very ornamental plant in cultivation, but on account of its large size, growing to the hight of four feet or more, is only suited to wide borders. A clump standing by itself is very effective. It blooms in July and continues through the summer. The species here figured, is the *E. purpurea*; there is another and a narrower-leaved species, both being found in the Western and Southwestern States. Under the name of "Black Sampson" the root is used by the herb doctors, but it is not employed in regular practice. Like many other perennials, this, in order to produce the best effect, should be undisturbed for several years. In rich soil it will soon make a strong and vigorous clump, and may stand by itself or be combined with other tall growing plants of similar character, and produce a very pleasing effect.

BLACK-CAP RASPBERRY—THE "GREGG."

Black-Cap Raspberries.—The Gregg.

There is perhaps no fruit about which tastes so much differ as they do with respect to the Black-cap Raspberries. While many prefer them to the red varieties, others find them positively disagreeable. They belong to a different species from the red varieties, and are as unlike in flavor as they are in color and general appearance. The black varieties are derived from *Rubus occidentalis*, often called Thimble-berry, which is found wild and, in the Northern States at least, extends entirely across the Continent. It differs from the common native red species in propagating itself by rooting at the tips of the long curved branches. Of this species there are many varieties in cultivation, some of them showing but little improvement over the wild fruit. Among the newest as well as the finest varieties of this class, is the Gregg, which is said to have been found growing wild on the farm of Messrs. R. & P. Gregg, in Ohio County, Indiana. This variety, as we have seen it on the grounds of Mr. E. P. Roe, is certainly very superior in size, productiveness, and the quality of the fruit, to any other black-cap that we have examined. With rather an aversion to fruits of this class, we find the Gregg quite acceptable; it is more juicy, and the seeds seem to be smaller than in any other. The engraving, which is from a photograph of a

eluster from Mr. Roe's grounds, is of the real size. So far as we are aware, all of the cultivated varieties of this raspberry have been found wild. If there have been any attempts to improve it by cultivation, we have not heard of them. Sometimes, as with the Blackberry, albino, or whitish forms of this fruit are met with, and there is a set of yellow-caps, but none appear to have become popular.

Notes from the Pines.

Whoever has occasion to pass the broad brackish marshes, or "meadows," as they are called, which lie near New York City immediately west of the Hudson, is attracted by the great abundance of large Hollyhock-like flowers of the Rose-Mallow; it is the Swamp Rose-Mallow (*Hibiscus Moscheutos*). The appearance of these flowers indicates that midsummer has come. In their wild state they present considerable variety, the usual color being rose-pink, varying greatly in depth of tint, and occasionally a white one is seen. Usually the white varieties have a purple spot at the base of their flower, but one of my neighbors was so fortunate as to procure one which was white throughout. Even the ordinary form is desirable as a garden plant, and with the white varieties a pleasing group may be made. We have received as *Hibiscus flavescens*, what is probably a marked form of this plant. The stems in this are purplish, the leaves much narrower, and the flowers before opening have a very light yellow tinge, scarcely perceptible except by contrast with pure white. When transferred to the garden, the Rose-Mallow grows much taller than it does in its native marshes, and is really a desirable plant in places where there is room for so large a clump as it will make. This plant illustrates a point that I have often mentioned, namely: that plants taken from wet grounds, and which in their wild state are never found in any other situation, are greatly improved by being transferred to the dryer soil of the garden. A remarkable instance of this is afforded by the common

Cardinal Flower (*Lobelia cardinalis*).

Some roots of this, taken from a swampy meadow and brought into the garden only a few rods away, are now (Sept. 1st) in full bloom with their strong, vigorous stems at least four feet high, and with a spike of its intensely scarlet flowers of a size that I have never seen equalled by the plant in its native localities. The Cardinal-flower is common all over the country, and illustrates the fact that to make a showy garden, one need not of necessity be at an expense for plants, as one with a little industry and observation, can find among our native plants sufficient to stock a large garden in a manner that will leave nothing to be desired in the way of beauty and variety. But few persons, even those who live in the country, seem to be aware of the great beauty of the wild flowers about them, and it is only when they have been brought into notice by florists, and a price is put upon them, that they seem to be appreciated. Not only are these wild plants increased in size and beauty by being placed in garden soil, but their period of bloom is often wonderfully lengthened. The common Bird-foot Violet (*Viola pedata*), when left in the fields has its time of flowering and is done with it, but in the garden it remains in flower all summer long. To be sure, this late bloom is not so abundant as the earlier one, but one can hardly go to a clump of these plants in a garden, without being able to gather flowers from it.... It is but a few years ago that we were gladly paying a dollar for a small plant of a new grass,

The Japanese Striped Eulalia.

Some plants when they get common are apt to lose in our esteem, not so with this beautiful grass. I saw not long ago in the grounds of Woolson & Co., a row of this grass nearly two hundred feet long; it was as tall as one's head, and presented a bank of variegated foliage that was most pleasing to behold. Indeed it was as much handsomer than the little plants, as the mass was larger. Aside from the beauty of this in the garden, its flowers are among the most desirable for grass bouquets, but in order to have them at their best, they should be gathered very early; in fact, before the flowers are fairly opened. This early gathering of the flowers of grasses is a matter worth attending to by those who would make use of them for winter ornaments, and I think that it is one secret of the great superiority of California Pampas-Grass plumes, as they have a softness and brilliancy wanting in those that have been exposed to the weather.

Grasses for Winter Bouquets.

The Ravenna-Grass (*Erianthus*) that, in our severe climate, is the best substitute for Pampas-Grass, which is not to be depended upon in the latitude of New York, has its flowers vastly improved by this early gathering. I have found that by opening the sheaths which surround the clusters, and thus anticipating the natural period of blooming, that the flowers are not only more plumy, but they are of much better color then when allowed to open naturally, and the same may be said of the flowers of the common Reed (*Phragmites communis*) of our marshes. By taking the flower clusters of this very early, the down of the flowers remains fast, and obviates the annoyance which ordinarily results from its shedding the down when thoroughly dried in the warm air of our dwelling rooms.

In the matter of ornamental grasses, too, one need not resort to exotic plants to get a pleasing variety. The Reed is often found in almost all marshy districts, while in dry and sandy localities the Tall Panic-Grass (*Panicum virgatum*), is abundant. This also greatly improves in cultivation, and its light and graceful flower clusters add a finish to a grass bouquet which cannot be imparted to it by any other species. With these two, and several smaller grasses, all taken very early in bloom, one can make a very handsome ornamental cluster. In drying grasses for winter use, it is, as a general thing, better to hang them up with the tops downward, and they should always be placed where they will not gather dust. In the abundance of

New Lilies from Japan,

and elsewhere, we are accustomed to look upon some of the old garden favorites as coarse and common. Indeed the old Tiger Lily is now seldom to be met with, yet for making a mass of brilliant color, what is more desirable? Better than the common form of this lily, is the variety called *splendens*. This has more compact flower-clusters, the plant is more robust and erect than the common kind, and a mass of this seen against a background of dark foliage is most striking. The Double Tiger Lily is very effective in producing a color effect, but it should be seen at a distance where the raggedness of the individual flowers will not be noticed. In passing a Broadway florist's store the other day, my attention was arrested by

A Mass of Pure White Flowers,

which at first sight I did not recognize. Upon closer inspection I found they were that form of the common Japan Lily (*Lilium speciosum*), known as the variety *præcox*. This, which is not so common as it should be, has rather smaller flowers than the ordinary form, is more regular in shape, its petals being symmetrically recurved, and of a pure white. Those in the florist's windows were disguised by having the anthers removed, a precaution necessary with all light colored lilies, at least when they are to be shaken about or transported, else the dark brownish pollen which is so copiously produced, will fall upon and greatly disfigure the petals. This variety, thus treated, is admirable for use in large floral decorations, and I know nothing which gives so large a mass of pure white and is at the same time so delicate in texture as this. This variety is equally hardy with the ordinary kind, and although it is called *præcox*, I cannot see that it is (as its name implies), any earlier, even if quite so early as the other varieties of lilies.

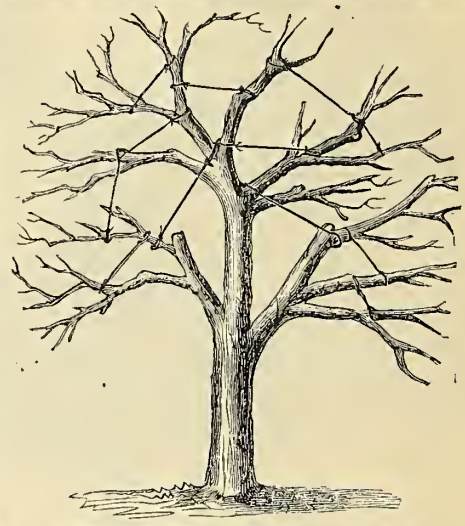
I think that the *American Agriculturist* was the first to bring into prominent notice that variety of *Lonicera Japonica*, the Japanese Honeysuckle, known as

Hall's Honeysuckle.

It is a satisfaction to have a plant as well as a person, on better acquaintance, fulfill its early promise; this Honeysuckle improves with every year's acquaintance. It grows rapidly, it climbs high, it has good foliage, it blooms early, and it blooms all the time, its flowers are fragrant, and—what more will you have? I know that some people will find fault because its flowers are not red or of some other color than the delicate white they have at first, but until somebody can make a honeysuckle to order, I shall stick to Hall's.

Staying Over-Loaded Fruit Trees.

The apple trees are breaking down under their loads of fruit. It is not worth while to let them. Tarred rope yarn is cheap and strong. One strand will hold a man's weight, and that is more than several bushels of apples. If, in applying the cord, you distrust a single strand, take two or more. First attach the cord to the lower limb, then draw it over an inner, upper crotch, place the toe of one



METHOD OF TYING OVERLOADED TREES.

foot under the limb, and lift it up a little, tighten the cord, not taking too much weight off the limb, and make fast with two half-hitches to the upper limb or crotch. Proceed in this way with every over-burdened limb which you can get at, and you will find the tree much better supported than it would be by poles. The accompanying cut shows the principle upon which this staying is done, so that one part of the tree shall support another.

An Excellent Early Squash.

The early or summer-squashes are, as a general thing, very poor in quality, being coarse, watery, and flavorless. This spring Mr. Gregory, of Marblehead, who has a way of introducing fine squashes, sent out a variety called the "Essex Hybrid," which is claimed to be a cross between the Turban and the Hubbard. Of the quality of this squash Mr. Gregory spoke very guardedly, as he had not cultivated it himself. He sent us some of the seeds for trial, and we found it to be quite as early as the bush squashes and in every respect vastly superior to them. The squash has a remarkably symmetrical form, being somewhat like the Turban in shape, but more regular. Its skin is at first whitish or cream-colored, turning to orange, the flesh very thick, with but a small cavity for the seeds. In quality it ranks with either of its alleged parents, and well sustains the reputation of Mr. Gregory as an introducer of fine squashes. The vine, as with the winter varieties, needs a plenty of room.

Ripening the Seeds of Trees and Shrubs.—Sometime ago our valued correspondent, Jean Sisley, Lyons, France, sent to the "*Revue Horticole*" a hint which some may find useful in this country. If it is feared that the season may not be long enough to allow the seeds of trees and shrubs to mature, he cuts the branches bearing the seeds which it is desired to preserve while the fruit is still green. These he places in pots of soil, as if they were cuttings, keeping the earth properly moist, or in bottles filled with water. The pots or bottles are to be placed in a cool greenhouse, where the seeds will in due time come to perfection. This method will be found useful with berry-like seeds and others which the birds take as soon as they be-

gin to ripen. We have no doubt that some herbaceous perennials, that bloom so late that they rarely afford seeds, might be advantageously treated in the same manner.

Planting Trees in Autumn.

Each year we are asked, "Do you approve of fall planting?" An answer, "yes" or "no," cannot be given to many questions asked us on such matters of practice. As to tree-planting, and also the shrubs that bear small fruits, it is only on our northern border, where the winter is prolonged at both ends, and commences with as much suddenness as it breaks up, that fall planting may not be done. Late October and early November are often the portion of the year in which out-door life is most enjoyable, and in which out-door work seems to tell better than at any other. Such golden days! Then the soil has not yet lost the warmth that it has been accumulating all summer, and to plant in it is like giving the trees bottom heat. It is rarely too dry, and if properly drained cannot be too wet. In proper tree-planting the fingers often do a part of the work in filling in among and around the roots, and it makes the greatest possible difference whether the soil be cold or warm. Some will admit every argument in favor of fall planting, but add as an insuperable objection: "If we get our trees in the fall, the leaves will be stripped." This stripping of the leaves is needlessly made a bug-bear. A nurseryman who regards his reputation, who expects his customer to come again, would not strip the leaves from his nursery trees, to their injury, *if he could*. Those who observe closely know that the preparation of the leaf for its fall is a most interesting operation. When the tree is in full growth, a leaf cannot be removed without some force; if pulled away in midsummer, it will be likely that some of the tender bark will come with it and a wound be left. Wait until the leaf has done its work, and examine it in October; there will be seen a distinct line between the leaf and the now ripened bark of the stem; a slight pull, or a lifting up as one would lift a pear to see if it was ripe, and away comes the leaf, leaving a clean scar, over which the process of healing has already commenced. When the leaf has completed its work and is *ripe*, it makes no difference whatever whether we remove it by a brush with the hand, or wait until the winds and rains beat it off. This matter of stripping of the leaves need give no anxiety, simply for the fact that the stripping cannot be done until the leaves are ripe and have nothing else to do. The roots of trees, placed in the warm soil in autumn, are not mere dead sticks stuck in the ground. A change and a certain growth is taking place. As an illustration of this, put a currant cutting in the ground in September; it looks only like a dead stick, but take it up in November, or just before the ground freezes, and the lower end will show a callus, and often small roots will have started, but the cutting is, to all appearances, dormant. So with trees. No matter how carefully they may be taken up, some roots will be broken and torn. If in planting in autumn we cut, as we should in planting at any time, every broken root back to a sound part, leaving a clean, smooth wound; in a short time these roots will begin to repair damages, and before winter checks all action, much will have been done towards overcoming the effects of removal. In the warmer States, anywhere south of 40°, in most years planting may continue the greater part of the winter without harm to the trees.

The Nettle Tree or Hackberry.

There is no native tree of which so many specimens are sent to us for a name as of the Hackberry (*Celtis occidentalis*); although it is found in most of the states and territories, it seems to be no where abundant, and is but very little known even to those who are familiar with trees. In general appearance the tree is like the Elm, and belongs to the same botanical family, but it differs from the Elm in producing a small berry about the size of a pea. As found in the Eastern States, it is a tree of moderate size, but further West, specimens are sometimes found 80 feet or more in hight. As a tree for ornamental planting it is desirable, but it is not very valuable as a timber tree, as the wood is not durable when exposed to the weather. The shape of the leaf is shown in the engraving, which gives a twig with the leaves and fruit of the natural size. At one side are shown the very small flowers, which appear in early spring, in small clusters; some of them are staminate only, while others are perfect. The fruit, which, when fully ripe, is a blackish purple, has a very thin, sweetish pulp,

THE NETTLE TREE OR HACKBERRY (*Celtis occidentalis.*)

and is sought after by birds and also by children. Although the tree is so little known, it is remarkably well provided with names. Besides those already given, it is also known in different parts of the country as Beaver-wood, Hoop-ash, Many-berry, False-Elm; and in the Southern States it is called Sugar-berry and Sweet-gum, this last being a name also applied to other trees. The name of the French Canadians, *Bois inconnu* (unknown wood), would imply that it was little known to them. The tree varies so much in shape and thickness of its leaves in different localities, that four species have been described from its different forms, but they are all local modifications and are now properly so regarded. One peculiarity about this tree is, that one seldom finds it in groves or clumps; indeed it is rare to find two within a radius of many miles. George B. Emerson says: "The tree might be described to one who wished to be able to recognize it, as an Elm bearing purple, sweet cherries, which continued on the stem through the winter." According to Arthur Bryant, the most important use for the wood of this tree is to make the flat hoops of flour and fruit barrels. He says that it is sometimes sawed into lumber to use for inside work, but that its tendency to shrink and swell with the moisture of the atmosphere, makes it of little value. The European Celtis, on the contrary, is much valued for the character of its wood, and is cultivated in some parts of France. Its long suckers are used for handles to hay-forks, to make whip stocks, ram-rods for muskets, walking sticks and carriage shafts, and the wood is a favorite with the wood carvers.

The Treatment of Celery.

Those who have adopted the modern method of growing celery upon the surface of the ground, instead of placing it in trenches, often make a mistake in banking it up too early. If celery be banked up in growing weather, the central portion will continue to grow at the expense of the rest, and the consequence will be that the outer stalks are pithy and worthless. Celery intended for winter use requires no banking up where it grew, it only needs to have its stalks straightened up, by bringing some earth to them with the hand; this operation is known to gardeners as "handling." If this is not sufficient to keep the stalks upright, enough earth may be drawn to them with a hoe to hold them in an erect position. Celery will stand a moderate frost without injury, but hard freezing will kill it. Celery that has been straightened up, will, after a few days, remain erect, and be ready to put away for the winter. It may be stored in trenches, a foot wide, deep enough to hold the plants, and as long as may be needed. The plants are stacked in this trench as close as they will stand, and a covering of leaves, straw, or bog-hay is put over it—light at first, but increased as the weather becomes severe. For family use, a very neat way is that described in our columns a few years ago by Peter Henderson. Boxes are provided, about nine inches wide, of a hight a little less than that of the celery, and of a convenient length to handle. A few inches of sand or good soil is placed on the bottom of the box, and the plants are stood erect and close together, as in trenches. This method is practicable only in a cool cellar, and the boxes, if placed side by side, should be so far apart that there can be no danger from heating, which would spoil the celery.

"Madeira Nut."—Mrs. "W. D. E." asks when to plant the "Madeira Nut." This nut is generally known as the "English Walnut," though the tree is not a native of Great Britain; but probably of oriental origin. We much doubt if the nuts, as they are found in this country, will germinate, as, like other nuts, they should be placed in sand or earth as soon as ripe, in order to preserve their vitality. They should be thus kept during the winter and planted in the spring. In Europe, where many varieties are known, the trees are grafted, in order to produce fruit of desirable kinds, much in the same way as with many varieties of fruit trees. If our correspondent only wishes to have a tree or two, it will be better to purchase them, as they are grown by the large nurserymen and kept by them for sale. In the Northern States they rarely produce fruit, but are productive in Virginia and southward.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

A Foot-Rest and Slipper-Box.

Most men like to put their feet upon a support that will bring them some distance from the floor, when they are to take the most solid comfort that a sitting posture can give. A rest for the feet makes a tired man more at ease. In view of this fact, and that chairs are not fitted for this foot service, but are liable to be scratched and injured, various kinds of foot-rests have been made, some of which are very elaborate and expensive. We have a foot-rest in use which we made ourselves, and though not in the highest style of household art, is at the same time neat and useful. It is made as follows: A pine box about 16 inches square was selected and taken apart. New lumber might have been used had it been at hand, and no old boxes in the cellar. The side pieces were sawed as indicated by the dotted lines in figure 1, and when brought together again gave the box a somewhat pear-shaped and pleasing outline. The bottom was then cut down and fitted in, and the cover fastened on by two, small iron hinges. This completed the new box, or foundation, as one might say. The covering was then put on, which may consist of any kind of cloth to suit the taste. The top, or cover, should be thoroughly padded, as upon this the feet are to rest. The sides may also be filled out a little, to give the whole a plump and pleasing appearance. Finally, small casters are fastened on the bottom by means of which the Rest may be moved readily about the room. This Foot-rest serves a good purpose as a stool, and the interior of it is a handy place for putting away the slippers when they are not in use. In looks it is not objectionable as an article of furniture; but as a rest for the feet after a hard day's labor it is something that would be greatly missed if it should be taken away.

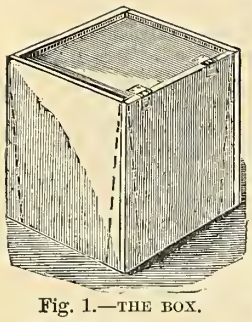


Fig. 1.—THE BOX.

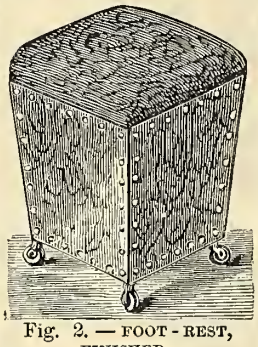


Fig. 2. — FOOT-REST, FINISHED.

Are Your Closets Ventilated?

There is nothing so handy in a house as an abundance of large, roomy closets; but because they are handy and extremely useful they are apt to be abused. There are many things, which, as a matter of course, are always put into a closet, of which the articles of outward wearing apparel make a large part. There are also things which ought not to go into a closet, *i. e.*, a closet adjoining, or closely connected with, a living or sleeping room. Of such are all soiled under-garments, the wash clothes, which should be put into a large bag for the purpose, or a roomy basket, and then placed in the wash-room or some other well aired room at some distance from the family. Having thus excluded one of the fertile sources of bad odors in closets, the next point is to see that the closets are properly ventilated. It matters not how clean the clothing in the closet may be, if there is no ventilation that clothing will not be what it should be. Any garments after being worn for a while will absorb more or less of the exhalations which arise from the body, and thus contain an amount of foreign—it may be hurtful matter—which free circulation of pure air can soon remove; but if this is excluded, as in many close closets, the effluvia increases, and the clothes, closets, and adjoining rooms in time possess an odor that any acute sense of smell will readily detect. Every closet in daily use in which the night-clothes are hung by day and the day clothing by night, should have an airing as well as the bed. If the closet can be large enough to admit of a window—and it is in some cases—an ample provision for sunlight and a circulation of pure air is provided in the window, which should be left open for a short time each day. In the case of small closets a ventilator could be put over the door or even in it. In many cases such precautions for pure clothing are not practicable, and the next best thing is, to see that the door of the closet is left open for a half hour or so each day, at that time when the windows are thrown up and the large room is purified with fresh air from out of doors. In this way: first, by keeping out clothes intended for the wash; and second, daily changing the air, the closets may be comparatively pure.

Home Topics.

BY FAITH ROCHESTER.

Baby's Bow Legs.

These need not cause anxiety in all cases. If the child is healthy, and has good, nourishing food and pure air—the two great essentials for making good blood—it will probably outgrow its bow legs naturally enough as its strength increases. Rubbing the legs with your hand at night and in the morning may help to strengthen and to straighten them, holding them straight as you rub them. If the case is pretty bad, the two legs may be bound together with comfortable bandages during sleep, rubbing them well before and after binding them. If the child is still quite young, it may be kept from standing on its feet for a few months, giving Nature time to straighten the crookedness while the limbs are growing stronger. A carriage and a high chair are helps toward carrying out this plan.

All the things that I have mentioned as curative agencies may well be used as preventives. A healthy child, with wholesome food, and pure air to breathe, if kept from standing and walking while too young and weak, will not have bow legs. Scrofulous children are more likely to suffer in this way, and those that are very fleshy. Don't take pride in your *fat* baby. Excess of fat is really a disease, instead of a sign of health. Fatten your pigs as much as you fancy, but do not deliberately fatten your children. Give them plenty of good growing food, and they will be plump enough for symmetry and not too heavy for comfortable activity. It is no wonder that the little legs bend under the heavy weight of some fat little toddlers. Such children should not be encouraged to stand or walk until they have grown strong enough to do so of their own accord, and then should not be allowed to walk too much.

I hear of many cases where quite badly bowed legs have gradually straightened themselves without artificial help. Others think their children would never have outgrown the defect if they had not resorted to bandages or splints. Some have splints fitted to the ankles and bound around them, but I think it can be necessary to resort to this measure only in very confirmed cases. I have heard of one little girl who was very badly bow-legged when three years old, but had entirely lost the defect a few years later. Her mother began to rub and bandage her legs together every night, and kept this up a few months until a cure was wrought. It will not do to put a baby into a jumper too young, nor to let it stay in too long a time. Probably eight or ten months is an early enough age for this exercise. If the child remains too long in the jumper its legs become weary, and if not strong they bend under its weight.

They grow strong under the exercise, but they are liable to grow crooked also. A safer exercise, though not as neat and pretty, is creeping. This is Nature's way of strengthening the limbs preparatory to walking, and I should be sorry to have it omitted from the list of baby's accomplishments.

Wanted—Good Graham Flour.

A year ago the *American Agriculturist* told its readers that much of the graham flour sold throughout the country was a poor compound of various mill stuffs, instead of the genuine "graham" of pure unbolted wheat meal.

"If it is bran that they want, give 'em bran," I heard a house-keeper say, who really did not care to have her family like the graham. This seems to be the motto of the millers also. I sifted some of their graham lately, and just half of the mixture that had been bought as "winter wheat graham" was pure bran, and very coarse bran, too. I am free to say that this is not what I want, and I am unwilling to give it to my children. In our Western cities and towns, where beautiful wheat abounds, and where the nicest of white flour is made, it is almost impossible to get genuine graham flour. I suspect that the "new process" of grinding works against the graham interest. The high grinding takes off a cleaner, coarser bran. Originally, we were taught to eat the bran because so much of the most nourishing part of the wheat—the gluten—was clinging inseparably to it. The bran by the new process is stripped so clean it is good for little on its own account except for those who need anti-constipating food. As waste matter, taken with other concentrated food, it keeps the bowels in good condition, and so is almost essential to people who have sedentary employments. The bran, to be sure, contains elements needed in the human body, but excellent authorities assure us that it usually goes through the body undigested, and if coarse and excessive, is apt to scour along with it nutritious material which would remain and nourish the body but for the mechanical action of the bran. I think it is best to sift out most of this bran, all of the coarse bran, if you are cooking for healthy people and children. Our sieves leave a deal of the fine bran and all of the gray gluten. It is aggravating, though, to be so swindled, and I think we ought to make a buzzing about the millers' ears. Examine their so-called graham, and you find that it is mostly bran and "shorts" (or "canaille," or "middlings"—three different names for the same thing, as I understand it,) with a little corn meal (usually the white kind), and a little cheap, fine flour. When this is the best I can get, I sometimes mix it with good white flour, half and half, thus diluting the bran enough to make it palatable. Even so, it is better than to live on white flour alone. Sometimes I sift half of the graham and add a little fine flour, and sometimes I sift it all and use it alone.

Mixing in the Bran.

I complained to a grocer lately of the branniness of his graham flour. He said others had found the same fault, and he "guessed the millers did *put in* too much bran lately!" as though bran had to be *put into* graham! Another grocer told me it was impossible for him to get better. He said that they could get what he called very nice graham, if the millers would let them go to the mill and take the wheat when first ground, before any bolting had been done. But the millers tell him that it won't do. They have to take an extra quality of wheat to make graham—something nicer than they use to make gilt-edged flour, probably! I feel like declaring emphatically that "I know better!" It happened to me once to live close beside an excellent mill, which ran its big machinery night and day, except on Sunday. I saw the freight cars left beside it every day and loaded with barrels of best quality, new-process flour, and shipped to Eastern markets. I had one sack of graham flour let down warm into the bag, just as it was ground, before it had passed a single bolt (or sieve), and this was the best graham flour I had seen in the West. There are first-class groceries, however, where such graham can be obtained, and we are usually so fortunate as to get it. Lately I have been sojourning in different places, and sympathized with the complaints of my friends.

Fine "New-Process" Flour.

I wonder if there has not been some mistake in the general abandonment of the old style of grinding. It costs an immense sum to put in the new-process machinery (to buy the patent or something), so that the very fine and white patent flour has a high price put upon it. This is what the millers seem mainly anxious to sell, and it is

praised up to us as more nutritious than the common "grade," or "straight," or "family" flour. They tell us it "goes farther" and is really cheaper than the "straight" flour, though it costs us considerably more than a dollar higher on the hundred-pound sack. From two men, proprietors of two different first-class mills, I have received testimony to the contrary. So I shall go on using the best straight or family flour. Here it is the "White Rose" or "Snow Flake," or these are the kinds I usually get, though I know there are others just as good. I fancy that light, sweet bread made of this really tastes better than the whiter bread, made of the finer flour, and I am convinced that we get quite as much, if not more, nourishment from it, while in our family it is a saving of at least $10 a year—perhaps $15—which would make quite a valuable yearly addition to our library.

There is no doubt, however, that this new-process "gilt-edged" flour is better in every way as food than the old-fashioned superfine flour, a flour equally fine and white, by the old process. The other was simply elegant starvation diet, as it contained very little except pure starch. By the new process of bolting the middlings, a much larger per centage of gluten is obtained, and this is the real muscle-making, strength-producing part of the wheat. As graham is compounded nowadays, it may be doubtful whether it contains, bran and all, pound for pound, any more gluten than the fine flour. Were the great prophet of grahamism, Sylvester Graham, after whom unbolted flour takes its name, now alive, he would utter a strong protest against the use of his name upon the majority of the products that are now called "graham."

Grass Stain Removed.

I thought grass stain was hopeless. I have asked experienced people several times if anything would take the stain of green grass from children's clothes, but without gaining the desired information until within the last month. Lo! boiling water will remove the color. Pour boiling water through the stain and it sets the green coloring matter loose, rinsing it away. I tried it on a large stain upon the front of my little girl's white dress, and easily removed every trace of the grass, rubbing it a little in the hot water. Grass stain, after washing with soap-suds, makes a dirt-colored mark, and remains an ugly blot on children's white clothing.

Iron Rust Stains.

Squeeze lemon juice into a cup, add a pinch of salt, and rub the stain in this. Then wash in clear, tepid water. Sponge goods that cannot be rubbed. Lately I saw a black cashmere dress badly stained with yellow spots of iron rust, on the black silk trimming as well as upon the cashmere. The color was entirely restored by sponging with lemon juice and salt.—[With some blacks the matter would be made worse. A piece of the material having iron rust should be tried first.—EDS.]

More Mouse Traps.

"R. B. K.," Columbia Co., Wis., has tried several devices or traps for catching mice, and finds the one that he has contrived himself the best of them all. Our Wisconsin friend's trap is shown in figure 1, and is a "dead fall," so made as to do away

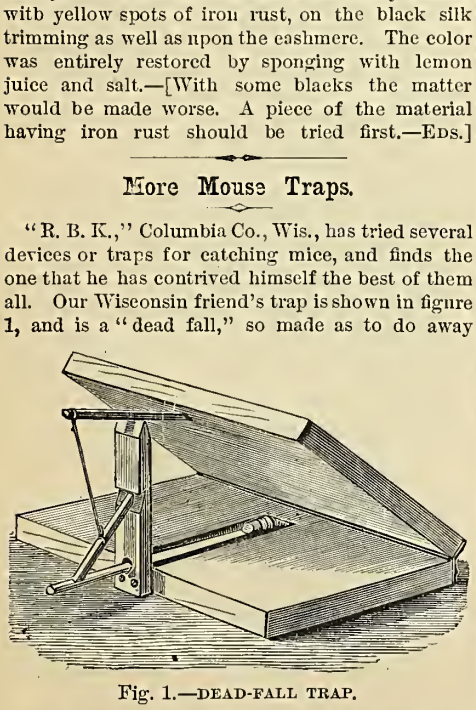


Fig. 1.—DEAD-FALL TRAP.

with the uncertainty of catching the mouse when the ordinary "figure four" is used. The trap is made of two boards 8 inches wide and a foot or so in length, fastened together at one end by a leather hinge. A slot is cut in the middle of the bottom board for the spindle to rest in. A piece of lath with a hole in one end for the passage of the spindle, is nailed on one end of the bottom board. The other parts are arranged as in the engraving, which shows the trap set. The bait is placed on the end of the spindle near the center of the bottom board.

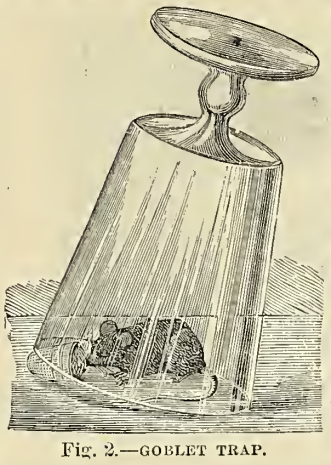


Fig. 2.—GOBLET TRAP.

Another form of trap is shown in figure 2, and consists of an inverted glass drinking goblet, with one side raised a little distance by placing a lady's thimble under it. The thimble should be so placed that the glass will rest upon it near the tip, that the least movement of the thimble will cause the goblet to fall. A piece of meat is crowded into the thimble, so that it can not be reached by the mouse until he has passed under the goblet, when by its nibbing the thimble is moved, the glass falls and the mouse is caught. This description came from a lady whose letter and address, we regret, is not at hand.

Grasses for Decoration.

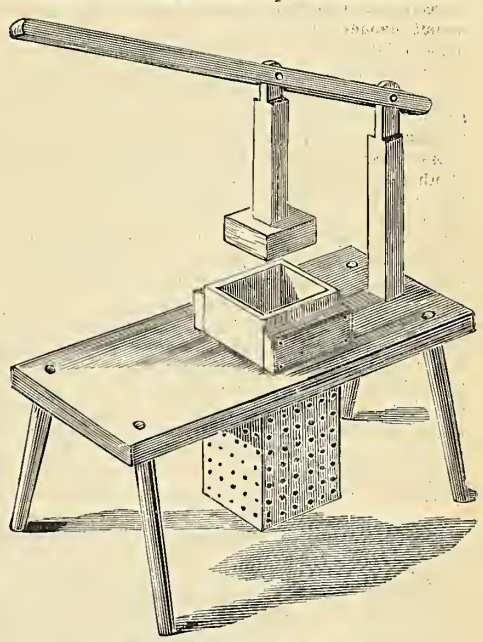
A bouquet or vase of properly dried and tastefully arranged grasses of the more graceful sorts, is a very pleasing decoration for the parlor or sitting-room in winter. The beauty of a grass depends largely upon the delicacy of its flower clusters, and their graceful and orderly arrangement in the *panicle* or "head." As a type of beauty among the larger grasses, a long feathery plume of the Pampas Grass may be chosen, and indeed it is a very pleasing object when preserved of its original shape and color. We must here enter a protest against the violation of nature by dying the plumes of grasses any color whatever. They, to our taste, can not be improved upon by being colored a deep crimson, an unnatural green, unpleasant black, or any other color. Grasses for their greatest beauty should be gathered just as they are fully in flower, and hung up or spread out to dry in a place that is free from dust. If a grass is gathered after it is beginning to mature its seed, the floral parts will become brittle and soon fall to pieces, and fail to be the objects of beauty that they would be if gathered when just at the opening of the flowers. There are a number of native grasses that are worthy of a place in such a collection. In general, it may be said that any grass that is attractive for its delicacy, grace, and color while growing in the field, will not be disappointing when it is tastefully arranged in the house.

Chapped Hands.—The raw winds of late autumn often produce in the hands of those who are much exposed to them that roughness and cracking of the skin known as chapping. If nothing is done to prevent, and the person is obliged to have his hands frequently wet and dried, the cracks will often get deep and be painful. Corn husking is frequently accompanied by sore hands from this cause. As both a precaution and cure for chapped hands we have used the following with benefit: Wash the hands, and the face also if it is inclined to chap, with Borax Water, and afterwards rub with an ointment made by melting Mutton-tallow (or suet), and then gradually adding an equal quantity of Glycerine, stirring the two together until cool. For the hands, this mixture can be best applied at night, using it freely, and warming it in by the fire, after which an old pair of gloves can be put on to keep the bedclothes from being soiled, and also make the skin of the hands softer. An excellent Glycerine ointment for chapped hands is made by melting, with a gentle heat, two ounces of Sweet Oil of Almonds, half an ounce of Spermaceti, and one drachm of White Wax. When melted, remove from the stove, and add gradually one ounce of Glycerine, and stir until the mixture is cold. The ointment can be scented with any perfume to suit the fancy. Keep in wide-necked bottles.

Household Notes and Queries.

ENTERTAINING COMPANY.—The whole philosophy of hospitality is summed up by Emerson in the following: "I pray you, O excellent wife, not to cumber yourself and me to get a rich dinner for this man or this woman, who has alighted at our gate nor a bedchamber made ready at too great a cost. These things, if they are curious in, they can get for a dollar at the village. But let this stranger see, if he will, in your looks, in your accent and behavior, your heart and earnestness, your thought and will, what he cannot buy at any price, at any village or city, and which he may well travel fifty miles and dine sparingly and sleep hard, in order to behold. Certainly let the board be spread and the bed be dressed for the traveller but let not the emphasis of hospitality be in these things. Honor to the house when they are simple to the verge of hardship, so that the intellect is awake and sees the laws of the universe, the soul worships truth and love, honor and courtesy flow into all deeds." One of the greatest comforts of having a home should be that in it we have a place for friends and even strangers—rooms, more than supply the needs of the family and extra "leaves" to the extension table. The secret of true hospitality, as Emerson has stated, is in its coming from the heart.

A HOUSEHOLD PRESS.—A subscriber from Kansas sends sketches and descriptions of a household



A HOUSEHOLD FRUIT PRESS.

press for obtaining the juice from small fruits and for other uses, which he has employed for some years. A hard-wood plank 30 inches long and 11 inches wide serves for the bottom. A hole six or seven inches square is made in the plank near its middle. The plank is raised upon four legs, and a box fitted into the hole, as shown in the accompanying engraving. An upright piece is fastened at one end of the base piece, and to the upper end of this a lever is pinned. The lever carries a "pounder," the head of which is square and just fits into the upright, perforated fruit box. In using the Press the currants or other fruit are placed in a strong cloth and afterwards in the box, when the lever and pounder is brought down and the juice is quickly and thoroughly expressed.

A POT OF ENGLISH IVY makes one of the most agreeable and cheap ornaments for the sitting-room in the winter. A common four, or five-inch pot with a strong plant can be bought of the florist for fifty cents or less. It is easy to make a basket of interlacing coarse wires to hold the plant.

BOYS & GIRLS' COLUMNS.

The Doctor's Talks.

We have heen for a while somewhat off of our regular track, and have talked about insects and other things, but now that the weather is getting cooler and the evenings longer, we feel more like reading tbose things that require some tbinking about, let us get hack to our talk abont Matter. Heretofore we have talked about solid substances, and I mentioned at the beginning, that we knew of matter in three states, solid, liquid, and gaseous. Do you ever think of the differenee hetween a solid and a liquid? How would you define it? Perhaps you would say that a solid stands hy itself, while a liquid requires something to hold it; and that would he a very good definition. But to go baek to some of our earlier talks; you reeollect that it was stated that all Matter was supposed to he made up of minute parts or atoms. Not that any one bas ever seen these, because they are too small to be visihle by the most powerful microscope; but all reasoning shows tbat these really do exist. You will still further reeollect that it was said that these atoms were held together by a force called Attraction or the Attraction of Cohesion. We know that this force is very great in steel, as we cannot break it or overcome the force of attraction, without great trouhle. But a lump of sugar is readily broken. The attraction hetween the particles of steel or atoms of steel is much stronger than hetween the atoms of sugar. In solids we find every degree of hardness, and hardness measures the force of this attraction; steel is harder than lead, lead is harder than sugar, sugar is harder than soap. When tbe attraction betweon the particles of a subtance is so weak that it cannot hold its shape, tben we have a liquid, and we have any degree of liquidity between such half liquids as tar and such a perfect liquid as water. But all liquids take the form of some solid vessel which contains them. Left to themselves, they spread about and have no definite shape of their own. Heat is the direct opposite of the attractive force. If we wish to overcome the attraction hetween the particles of lead we put the metal in a ladle over the fire and it soon becomes a liquid. Heat has destroyed the force of attraction between the particles of lead. So witb a liqnid; if we abstract tbe heat, and allow the force of attraction to act, it soon becomes a solid, as with water. We have only to extract a certain amount of heat from water, and it at onee becomes the solid ice, having all the properties of other solids. Bnt we shall say more of heat at another time, as it is one of the most interesting subjects of auy that we bave to deal with.

But it is safe to say that the condition of Matter, wbether solid or liqnid, depends, as a general thing, upon heat, tbere being but few liquids that have not been reduced to tbe solid state by abstracting the heat, or wbat is the same thing, by exposing them to an intense amount of cold; and there are not many solids that, by the applieation of suffieient heat, have not heen bronght into the liquid state. What we wish now to take up is, the mechanical properties of liquids. As in solids, there is a wonderful differenee in the density or weight, so there is an eqnal differenee in liquids. The heaviest liquid, of whieb we have any knowledge, is quicksilver or mercury. This is fourteen times heavier than water. On the other hand we have liquids mnch lighter than water; you know that most oils will float upon the surface of water, because they are lighter, and there are liquids still lighter than any oil. You will recollect that in comparing the weight something was said about Speeific Gravity. The Specific Gravity of a solid is its weight as compared to an equal bulk of water. So with the specific gravity of liquids. Water is taken as the standard of comparison, and when we say that the specific gravity of mercury is fourteen, we mean that a given hulk of it, for instance a tumhlerful of it, would weigh fourteen times as mnch as the same tumhler full of water. Not only are the liquids heavier than water, compared in this way, hut also those that are lighter than water, using the minus sign. The specific gravity of ether is stated as .713. Perhaps you would like to know how the specific gravity of liquids is taken. There are two ways. One is to have a bottle that holds up to a mark on the neck, just a thonsand grains in weight of water. If this bottle he filled up to the mark with quicksilver instead of water, and weighed, the bottle being balanced of course, the weight will be found to be fourteen thousand grains. So if we fill it to the mark witb ether and weigh it, the weight will be about .713 grains instead of the thousand; so we say that the specific gravity is .713. This, however, is a slow metbod of taking the specific gravity. A little instrument called the Hydrometer is used for this purpose, that long word meaning water measurer. The common sbape of the hydrometer is shown in figure 1. This you see is a glass bulb, to the upper part of whieh is attached a stem on which figures are marked. Below it is weighted witb shot in order to make it float upright in the liquid. When this is placed in pure water, the point to which

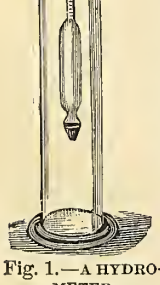


Fig. 1.—A HYDROMETER.

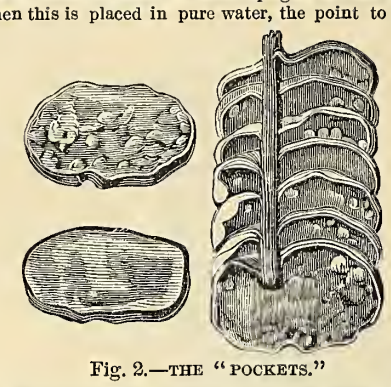


Fig. 2.—THE "POCKETS."

the instrument sinks is marked upon the stem. If this be placed in a liquid that is heavier than water, it will not sink so deep, and if it be placed in a liquid lighter thau water, it will sink deeper. By the use of this instrument, we may easily learn the specific gravity of any liquid in which it may he placed. In practice there are two kinds, one for liquids lighter than water, and one for liquids heavier than water, as it would require too long a stem to bave one instrument answer for both. These hydrometers are used in testing various spirits, acids, and such liquids the strength and value of which depend upon their specific gravity.

For example, Sulphnric Acid, or as it is more generally called, Oil of Vitriol, is largely nsed in a great number of manufacturcs—indeed so important is it in tbe various arts, that a distinguished man once said that the rank of a nation as to its arts and manufactures could be told hy the amount of Oil of Vitriol it used in a year. When this is of proper strength, it is almost twice as heavy as water—its proper specific gravity being 1,845. If the bottle before mentioned as holding 1,000 grains of water, was filled with Sulphuric Acid, it would weigh 1,845 grains. Tbe maker of tbe acid might add a fourth of its bulk of water, without the knowledge of the purchaser. But the purchaser can at a glanee tell whether his acid is of tbe proper strength, by plunging the Hydrometer into a portion of it. So the Hydrometer is not merely a scientific toy, but comes into use in business life....But we can not just now say more ahout liquids as there is

AN INTERESTING WHAT IS IT?

to be disposed of. My young friend, Edwin K., sends something which was found on the shore of Long Island Sound. How his "something" looks is shown of the real size, as to width, in figure 2, hut was, when found, ahout eight inches long. It consisted of many oval pockets, each attached hy one of its broad sides to a sort of cord that held the whole together. These poekets were of a material much like parchment, or dried bladder in appearance, and like those substanees, exceedingly tough. What may he called the front edge of these pockets, that is, the edge opposite tbat hy which they are attached to the eord, is slightly wavy or "ruffled," and there is a small hole at this part. When one finds a thing that seems strange to bim he should first

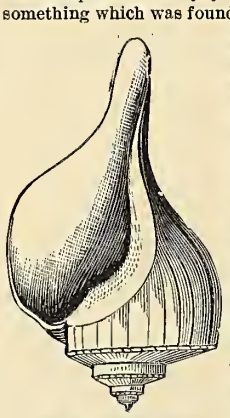


Fig. 3.—THE PERIWINKLE SHELL.

PUT QUESTIONS TO IT,

before putting questions to us. Had Edwin, by shaking, asked if tbere were anything inside of these pockets, the rattling sound would have said "yes," just as plainly as we can. Tben the next qnestion would be—"What is inside of these?" only you would have to ask it with the point of a sharp knife—a little cut, a small opening, and out drop several little things, which rattle down upon the paper you have placed to catch tbem. Tbese things that were in the pockets, what are they—they do not look like grains of coarse sand, but to make the matter clear you take a magnifier and lo! the story is told—

THE GRAINS ARE LITTLE SHELLS!

and you know at onee that this string of pockets or bags is somehow concerned witb the early growth of a creature that has a shell. Those of you, who live near the sea shore, must have often seen a shell like that in fig. 3.—only twice as long and wide, and even larger. This shell is shown empty, but it, of course, at some time contained an animal. On our shores this is called

THE PERIWINKLE, OR WHELK,

hut is unlike tbe creatnres known in England hy those names. The material, sent by my young friend, is the spawn cases of this animal. I suppose that when this spawn is first laid by the animal, there are eggs in the pockets, but I never came across any in which the eggs had not heen hatched, and tbe tiny Periwinkle had each a minute shell, like the large one in shape. Some persons eat the Periwinkle, placing them in water and boiling them, when the animal may he easily removed from its shell. Seeing others eat them, I once tasted a Periwinkle—that taste has answered for half a century, and I don't think I shall ever repeat it. The shells are used by boat-huilders. You notice what a long spout, so to speak, it has; the boat-huilders use them to rnn tar into cracks when they are "caulking" the seams of their hoats; the body of the shell heing filled with tar, it can be poured out through the long, narrow spout, in a very small stream. The scientific name of our Periwinkle is *Pyrula canaliculata*. *Pyrula* is from *Pyrus*, the Latin word for "Pear," and *canaliculata* is from the Latin word for a "channel," and means, having a small channel. If the scientific names of animals and plants look hard and unmeaning to you at first, they will seem different when you learn from what they are derived. A look at the engraving shows that—"The pear-shaped shell that has a little channel," describes it very clearly; *Pyrula canaliculata*, is only a shorter way of saying it.

Our Puzzle-Box.

CONCEALED FABRICS.

1. Jennie is forever bringing Hamburg edging home with her.
2. The plant was recommended to me by a farmer in Ohio.
3. She had read the poems of Walter Scott, only.
4. Tom said he had never read a line, never wanted to, and never meant to.
5. That is a pretty old fossil, Kate.
6. Is a tin trumpet a musical instrument?
7. We need not fear, they will not harm us, Lincoln.
8. Is the composer German or French?
9. As soon as I spied the rascal I concealed the money.

NUMERICAL ENIGMA.

I am composed of 7 letters:
My 7, 6, 5, 1, is a measure.
My 3, 2, 1, is the whole of anything.
My 7, 2, 3, 4, is unorganized earthly matter.
My 7, 5, 6, 4, is a weapon.
My 6, 2, 3, 4, is a metallic oxide.
My whole may sometimes he seen in a drug-store, sometimes on tbe dinner table, and sometimes in the garden.

PERRY MCI.

CROSS-WORD.

My first is in hobble but not in limp,
My next is in edging but not in gimp,
My third is in hatchet but not in ax,
My fourth is in honey but not in wax,
My fifth is in letter but not in hill,
My sixth is in valley but not in hill,
My seventh is in river but not in lake,
My eighth is in fritter but not in cake,
My ninth is in pleasures but not in joys,
My tenth is in bustle but not in noise:
Now take my advice and be happy and gay,
No matter what any old croaker may say.

DEFINITION PUZZLES.

(Letters with whieh to form the word defined may be found scattered in each sentenee.—*Example.* That by which anything is regulated. Word, *rule.*)

1. The little wheel of a spur.
2. Pertaining to life, very important.
3. Praetiee, custom. 4. A sort of scuffle.
5. Seeond growth of grass.
6. Very poisonous, malignant.
7. A place of worship. 8. A piece of mechanism.

PI.

Yeah oureage onehug ot viewer oury now tonccud, ot doncmen ti hewer ouy dettee fulsat, ot maden ti ot het steb fo oury bility, ot kame dogo loversse orf ruetuf aceduing, dan ot peek meth.

SQUARE WORD.

1. A friend. 2. Fat. 3. An asteroid. 4. To impede. 5. Cuts down.

LITTLE FOLKS.

CHARADE.

Hark! the morning bell is ringing
From the steeple loud and clear,
And the pious crowd is wending,
Reverent souls, my first to hear.

On my next the grass is growing,
Mayhe 'tis a city lot,
Upon the globe in every land,
I'm sure to find my space and plot.

The hideous whole, how shall I name it!
Cruel, bloody, fearful strife;
I dare not tell the countless numbers
That through me have lost their life.

AUNT SUE.

WORD-MAKING.

(To one of the words in a list, add the letter at the end, and with it transpose the word into another.)

1. List: make, house, slow, phial, them, many; letter, C.
2. List: toe, bold, martyr, coward, lyre, he; letter, B.
3. List: hungry, greed, hoots, eye, mustard, cow; letter, L.
4. List: dreamer, broom, servant, gold, zone; letter, E.

DOUBLE ACROSTIC.

The initials form a river, and the finals an animal.

1. To rebuke.
2. Real.
3. An animal.
4. To strike.
5. An exclamation.
6. A city.
7. A metal.
8. To draw.

NIP.

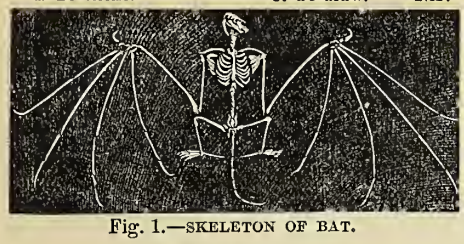


Fig. 1.—SKELETON OF BAT.

CONUNDRUM.

What letter of the alphabet would provide clothes for a poor boy in winter?

ANSWERS TO PUZZLES IN THE AUGUST NUMBER.

WORD MAKING.—1. Add the D. R. to the word "beast," transpose it into "dabster." 2. Local + O. H. = alcohol. 3. Model, earldom. 4. Steam, amnesty. 5. Clean, caleine.

CONCEALED QUOTATION.—Like a dewdrop from the lion's mane he shook in air."

DEFINITION PUZZLES.—1. Quaint. 2. Utensil. 3. Upstart. 4. Vintage. 5. Synonym. 6. Rustic. 7. Ornate. 8. Ruin.

SCATTERED SQUARE.

C A R E
A N O N
R O A D
E N D S

SUBTRACTIONS.—1. Bone—B = one. 2. Stone—St = one. 3. Five—Fie=V. 4. CIVIL—CIIL=V. 5. Weight—W = eight. 6. SIX—S=IX.

NUMERICAL ENIGMAS.—1. Never try to appear what you are not. 2. Mocking bird.

CHARADE.—Mushroom.

CROSS-WORD.—Vain-glory.

SQUARE WORD.

H O P E
O P A L
P A I L
E L L A

POSITIVES AND COMPARATIVES.—1. Waif, wafer. 2. Rush, Russia. 3. Tamp, tamper. 4. Ham, hammer. 5. Tend, tender. 6. Ten, tenor. 7. Cent, center. 8. Dress, dresser.

ANAGRAMS.—1. Pettifogger. 2. Burthen. 3. Interpose. 4. Entrances. 5. Reminds. 6. Merchants. 7. Rewarded. 8. Delivery.

ILLUSTRATED REBUS, No. 479.—Contentment is a pearl of great price.

SOME OLD BIRDS IN A NEW FORM.—Partridge, Jay, Lark, Crane, Crow, Condor, Sparrow, Kingfisher, Eagle, Crosshill, Sheldrake.

The Ant and the Fly.

While passing along the roadside to-day I saw a small object moving over the flagging stones of the side walk.

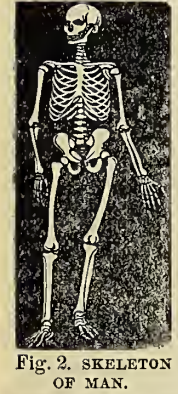


Fig. 2. SKELETON OF MAN.

At a second glance I saw it was a red ant, and that it was half dragging and half carrying a large fly, which appeared to be dead. That so small an animal could carry so large a load—the fly being two or three times as large as the ant—was interesting, so I stopped to see it done. Thinking what might be hard for the ant to do on the smooth stone, would be given up when greater obstructions were put in the way of its progress I turned the ant, with its load, towards the grass upon the border. It was hard work now, but the ant did not give up by any means, it tugged and pulled the fly over the grass stubble and grass stems that lay across its pathway. Sometimes the stems would make a net-work through which the great load would not pass, and after trying faithfully to break through, the ant would turn to one side and go around the obstruction. In a number of instances, while I stood and watched, the ant would leave the fly when in a tight place and go in search for an easier passage. Once after looking for some time as if in dismay, the ant found a way out, and turning back towards the prize it raised itself on its hind legs and looked around as if to make sure, and then drawing its fore-feet across its head went vigorously at work. This last action may remind you of boys, and men as well, who, when they have some great task to perform, some heavy load to lift, will straighten themselves up to full length and moisten the palms of the hands with the saliva from the mouth. After I had followed the ant with its load for a considerable distance I put myself in its way, and made it go again to the sidewalk where at first, to its joy, it found much better travelling. But wishing to see what might be the ant's regard for its load I caught it and took away the fly. This made the ant much excited, and if the same motions should be made by a boy upon taking anything from him, we would all say that he was mad. The ant soon began to run in gradually widening circles, and very rapidly. The fly was again placed upon the paving stones about a foot from the "run" of the ant, and was in a few seconds in the hands of its captor. I then took the fly from the ant, simply separating them by an ordinary envelope, edge down, when the ant tried its best to crawl under at the point nearest to the fly, but soon saw the folly of this and went around at the end. Just at this time a gust of wind came which lifted the fly up and carried it some feet away. The ant was again in anger, and began its circular motions as before. If my time had not been worth more than that of the ant's, I might have been able to state the results of this search; but as it was I brought the fly back to within a foot of the ant and he was soon happy again. As a parting torment I took the fly again, not raising it into the air, but pulling it rapidly along on the paving stones, when the ant followed in the trail and finally, greatly to its satisfaction, ran off with its booty. U. H.

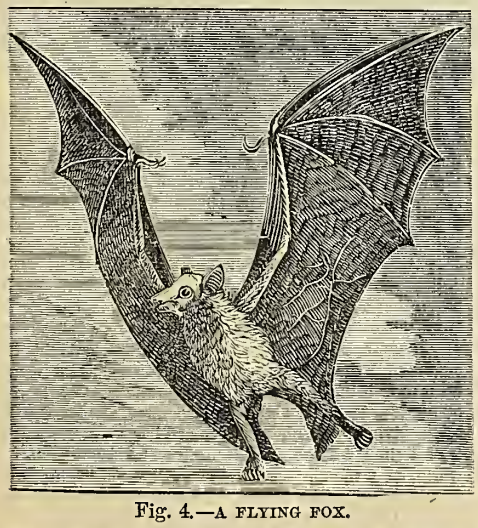


Fig. 4.—A FLYING FOX.

Something About Bats.

Bats are queer animals. One seldom tires of looking at them—either as they are flying in the air at sundown, or after they have folded their wings for a rest during the day. The early naturalists, that is those who studied natural objects many years ago, were puzzled by the bats; they could fly and therefore they called them birds and put them in the same order as the great Ostrich—which by the way does not fly. Bats have teeth—as many of the boys and girls may perhaps know by experience—and have a fine soft coat of fur; in these things they are like rats and mice. Why is it that a bat can fly through the air, and coming through the open window can flit around the room, while the little mouse is doomed to run upon the ground to be shut away from the bread and cheese of which he is so fond, if he cannot climb to it? The first figure will help us to answer this question. The first thing that one will notice in a bat are its peculiar wings. They are not like a bird's wings, but made up of a thin skin, stretched across from some bones which are made specially long for the purpose. It may be that some of you think the wings are like the top of an umbrella or a portion of one, and the comparison will not be far out of the way. In figure 1 we have the skeleton, or the bones of one of the larger bats, the flesh and all other portions having been removed. Figure 2 shows the skeleton of a man, of course greatly reduced in size. It will be seen at a glance that our own bones and those of a bat are a good deal alike as to number, position, shape, etc. That which just now interests us most are the bones of the hands. In man they are quite short, while in the bat they are very long. The middle finger, for example, being longer than the head and body of the bat. If we had our fingers as long in proportion as those of the bat they would be very much in the way; but if we had those fingers and a tough skin stretched between, then we should have wings like those of the bats; and perhaps we might use them for flying, and have great times in the air.

One of the most common bats is the Long-Eared one given in figure 3. But what is the use of having such big ears? you may ask. There is a common expression: "As blind as a bat." Now, bats are not blind, but their eyes are very small and appear to be of a poor quality; this is especially true with the Long-Eared Bat. To make good for this lack of sharp eyes, the ears are of larger size, and in a measure take the place of the eyes—just as a blind person will make his ears do much of the work that his eyes would do if he could use them. The sense of smell of the bats is also exceedingly acute, the nose being of large size and grotesque form as if it had been turned inside out. These curiously formed noses

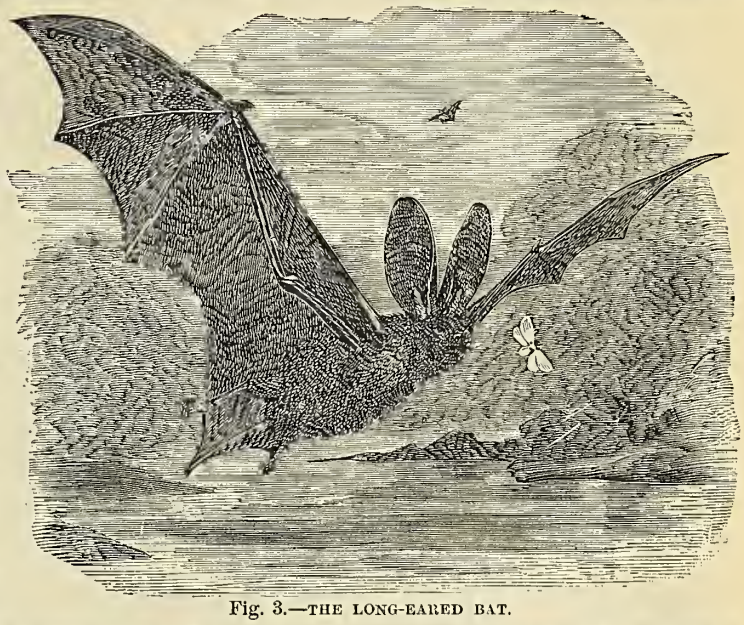


Fig. 3.—THE LONG-EARED BAT.

belong to those bats that pass much of their time in dark caves where there is little or no light. The delicate sense of smell also acts as a substitute for eyes in places where eyes would be of no use. Figure 4 shows one of the Flying Foxes, so-called on account of the red, fox-like color of the fur and foxy head. They are the largest of the bat tribe, some of them measuring five feet across the open wings. Although so large, unless roughly handled, they are not at all dangerous. The Vampire Bat, Fig. 5, is not so large by half as the Flying Fox, but has some very unpleasant stories told about it; it is accused of sucking the blood from sleeping persons. Many tales have been told of this South American bat; which is said to come silently by night and, poising itself upon the naked feet of its sleeping prey, fan the victim with its extended wings, which, producing a cool atmosphere in those hot climates, aid in soothing the sleeper into a still deeper repose. The bat then begins its work by making a tiny wound with its sharp teeth, and with its lips sucks the blood from its sleeping victim until he perishes from loss of blood. This is now considered but a traveller's tale, the real facts in the case being that the Vampire does bite animals and man, but the wound is usually very slight and never fatal.

The bats in the north, and those that most of the young readers of the *American Agriculturist* have met or are likely to meet, are small and harmless If there is

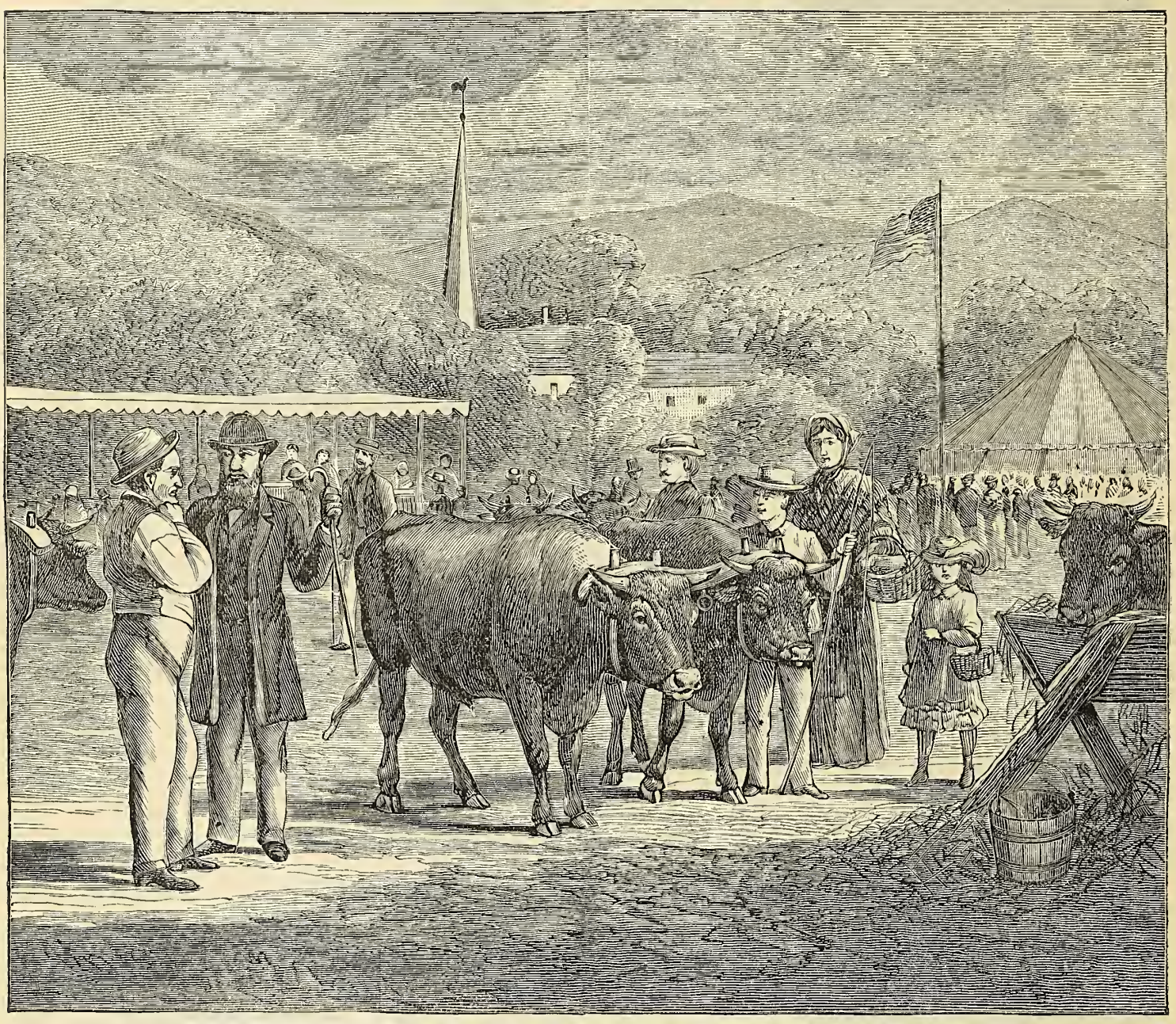
Fig. 5.—VAMPIRE BATS.

any lesson of more than unusual importance to be drawn by a study of hats, it is the peculiar development of the hands, or paws, by means of which a group of animals, otherwise closely related to creeping and walking things, can rise in the air, and propel themselves through it with the ease of birds, though with irregular motions more resembling those of moths and butterflies.

The Steers at the Fair.

The first fair that I ever went to was a Town Fair held in a grove near where I lived. It was so far away that we had to harness the horses and drive over, all hands going in a large wagon. I remember we hitched the horses on the road side some distance from the gate to the fair-grounds, and gave them some hay to eat while we went to see the sights on the other side of the high fence. The next fair that I attended was held at the same place just about a year after the first one, and the third about a year after that. I might have kept on going to that Town Fair for many more years had it not happened that the Town Fair was changed to a District Fair and the Town Fair and its grounds were given up. How sad and lonesome the old trotting track looked, or rather the place where it was once so smooth and fine—all grown up to wheat, and afterwards to grass! The District Fair was a much larger one than the old Town Fair, as it took in more country. It was held in a much larger field, had more and better buildings; the track was larger and there were ever so many more people that attended it. It cost more to get in too; but it was worth more, for there was much more to be seen. I should probably have kept going to this District Fair every year until this day, and enjoyed it too, had not things so turned that I moved nearly a thousand miles away. But I intended to tell you about some *Steers at the Fair*. The steers were my steers, and the fair was that of the District that has been mentioned. "Our folk" had a great many steers; in fact, there was always one or more yoke to be broken every year, and as the boys were not very numerous in our family, I was "early and often" put to the whip—that is, given the old oxen and then the steers to drive. A boy has his fancies, and I had mine. There was one yoke of steers that were, in my eyes at least, particularly fine. From the day they were born—both on the same day, and cared for by the same mother—they were my steers; not because I had bought and paid for them, but—you know how it is—in name, which amounts to much the same thing. That they looked alike might be expected, being so closely related—twins are often hard to tell apart, especially when they are small. But I knew Fred apart from Frank early in their calf life, and could have told the one from the other in the darkest night. I watched over these calves, combed them, fed them, and perhaps played with them when it would have been just as well as if I had been at work in the garden. They flourished under my care; were plump, smooth, gentle, hungry fellows all the summer long. How I did want to take them to the Fair in the fall; and I should have perhaps done it had it not been that I was taken sick and I was not able to go—and of course the calves could not go. That winter and the following spring the young steers were accustomed to the yoke and taught to draw the hand sled and the little cart. We used to call it "breaking" them; but they were so kind and took so readily to the yoke that the word "breaking" sounds harsh. The fact that they were so obedient may be because I was gentle with them. I had been cruel to other steers, and they had frequently served me an unkind turn—either of the head or the tail—and with this experience and the instruction of my elders I made up my mind to see what "sugar plums" would do with a yoke of steers, or in other words, if kind words and loving hands would not save the use of the whip. They will almost entirely; it is sometimes necessary to let a young steer feel, and with a little smarting of the skin, that there is a master whose will is to be his (the steer's) guide, but in most cases I carried the whip much as some young men I know walk with a cane. The fall after they were a year old, Frank and Fred were as well trained and as trusty as the oldest yoke of oxen on the farm—in fact, I thought more so. The "twin steers" were not only the pride of my young heart, but I observed the whole household took more than ordinary notice of them. It was getting "fair time," and I knew it. I had had that Fair in my mind all the summer through, and thought of it most when my steers behaved the best. They must go, I said, and none of the rest of the folks could raise any objections. I remember the day I took them on foot along the road to be entered as "yearling steers" at the District Fair. But the scene when they were driven out on the following day to be viewed by the judges is much more vividly impressed on my mind. I shall not forget how well the young steers behaved themselves with all the people around—the small boys shouting, the older ones laughing, and the band playing. If I ever do forget that time I will go to my keep-sake drawer and bring out the red ribbon that was tied on Fred's horn as the token that he and his mate had received the first prize. How the other young men with "yearlings" feel I do not know, but as for me I was more than paid on the spot for all the trouble—it was not trouble—that I had been to in bringing up the steers to their present state of usefulness. The artist has rendered me substantial aid in giving you a picture of my young team, and at the trying time when the eyes of the judges—and of the world, as I thought—were upon us. It all paid, boys. The kindness to the calves, the care of them as they grew up, the taking of them to the fair, all paid me, and it will pay any boy that can do likewise. Even a stupid (?) calf has noble traits of character that when brought out will bless the one that has the desire to help it to do it.

UNCLE HAL.



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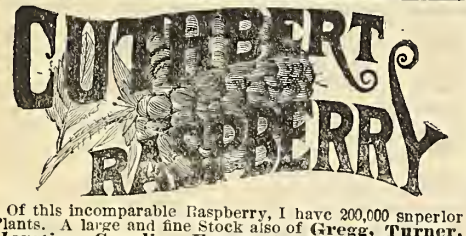

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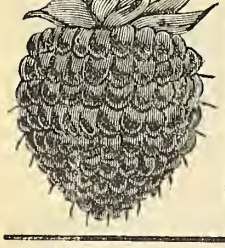

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New and Rare Winter Flowering Plants.—New Fruits, Dutch Bulbs, &c.

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THE PHILADELPHIA
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BALDWIN'S AMERICAN
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The Simplest and Best in the Market.
Has only three feed gears.
Cuts all kinds of Feed,
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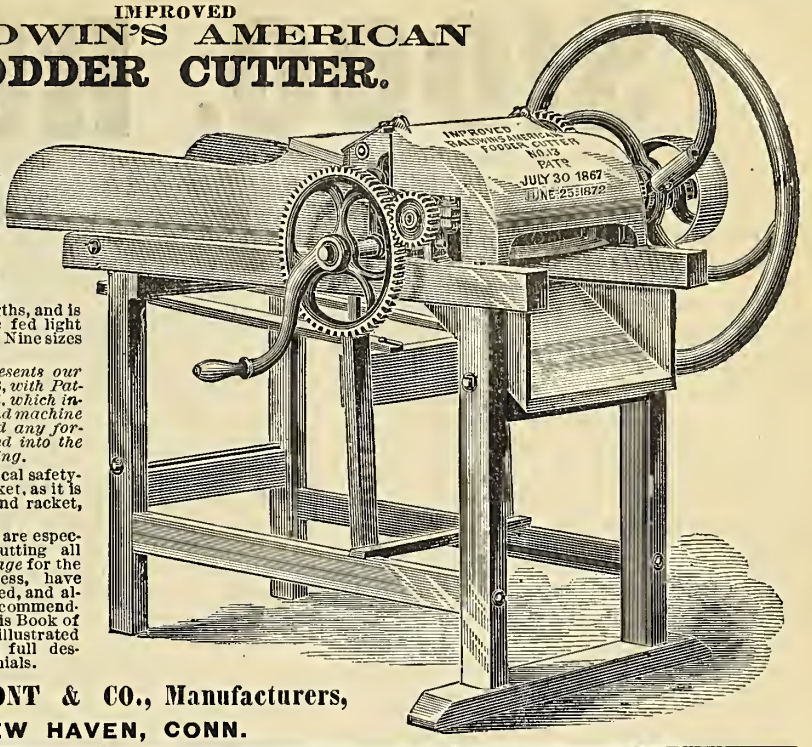

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It is the only practical safety-fly wheel in the market, as it is governed by pawls and racket, and not by friction.

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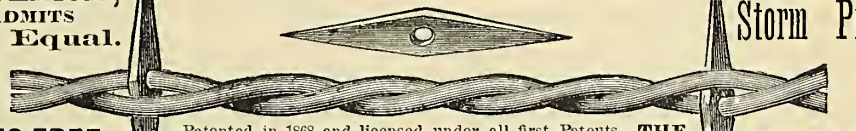

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Weight Only ONE POUND To the Rod.

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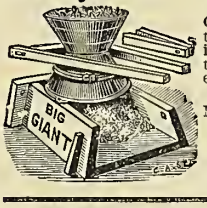

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Grinds twice as fast as any other Mill of same size and price.

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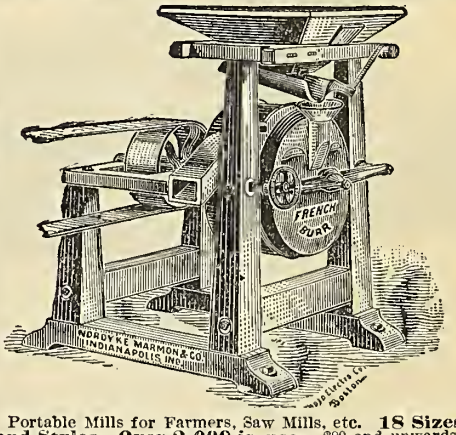
ESTABLISHED 1851.
Grist Mills of French Buhr Stone.



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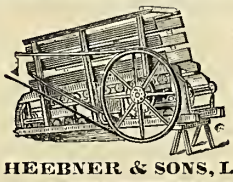

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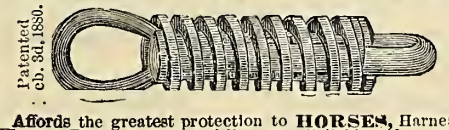

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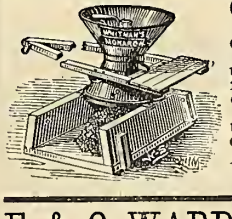

Only Mills made with **Cast Cast-steel Grinders.** Warranted superior to any in use for all purposes. Will grind faster, run easier, and wear longer. Satisfaction guaranteed. Also Corn Shellers, Feed Cutters, Cider Mills. Send for circulars and prices.
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WHITMAN AGRICULT'L CO.
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A BRAN NEW AGRICULTURAL ENGINE for sale Cheap. 5 x 6 Cylinder, one of the very finest made with Automatic Stop Motion Governor, Adjustable Speeder, Pump, Heater, Whistle, Self-Feeding Oil Cups, Water Guage, Steam Guage, Extra Pop Safety Valve, Hose, etc., etc., one of the very finest.
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(ESTABLISHED 1845.) Send for Circular of Great Value, giving full instructions for shipping
POULTRY, GAME, BUTTER, and PRODUCE.
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$1000, REWARD

For any Washing Machine that will Wash Cleaner, Quicker, with Less Labor and Wear and Tear of Clothes than the

ROBBINS FAMILY WASHER AND BLEACHER, PAT'D OCT. 3, 1871.

THE ORIGINAL AND ONLY PERFECT SELF-OPERATING WASHER IN THE WORLD.

No rubbing required. No more yellow clothes nor hard work on washing day. It will wash anything from a lace curtain to a horse blanket, and can not get out of order.

Good Agents Wanted, both Male and Female, to whom Liberal Inducements are Offered. Agents can make from $10 to $100 per week.

THE ART OF CLEANSING FABRICS

is yet but imperfectly understood by thousands of good house-keepers. The numerous devices of friction rollers, pounders, squeezers, dashers, agitators steam wash-boilers, etc., have all failed in one or more of the three essential points, namely: The saving of labor, wear and tear of clothes, or in perfectly extracting the dirt and discoloration

WHAT IS IT REMOVES THE DIRT?

You may ask washer-women and house-keepers, and your answer from nine out of ten will be, "Plenty of elbow-grease," or in other words, laborious rubbing upon the wash-board. And such is the case, for you first rub soap upon the cloth, and then you have to *rub it in* to make the dirt soluble; but does that remove it? No; to do that you must dip it in the water and rub repeatedly to *force water* through the fabric, again and again. That is what removes dirt after having been softened by the chemical action of the soap.

The way in which this could be most economically accomplished has been developed in the FAMILY WASHER AND BLEACHER, which embodies all the above points.

Mechanical devices take the entire time of a person during the whole wash and will not remove streaks from clothes. It is harder to operate them than to use the common wash-board. They are constantly getting out of order, and wear out in a short time. With all *such devices*, as well as the *rubbing-board* there is *great friction* and consequent *unnecessary wear* and *tear* of clothing. With the Washer and Bleacher there is *no friction* or *wear* of the fabric whatever; washing, baking, and housework are contemporaneous operations—the fire doing the washing and baking while the housewife does her housework. As stated, *water force* is what removes dirt from the fibre of the cloth.

A large body of water is required to hold in solution a comparatively small amount of dirt.

THE PRINCIPLE OF THE WASHER AND BLEACHER

embodies all the essential points. First, we have the desired heat which expands the fabric and causes it to discharge the dirt. Second, we obtain a powerful suction beneath the clothes, which produces a rapid *downward current* or *water force* through and through them, thereby removing the dirt. Third, we use a *large body of water*, which holds the dirt in solution. Fourth, we use but a small quantity of soap. Fifth, the washing is done by water, and *not by steam*. This process cannot injure fabrics. It cleanses thoroughly, *rinsing the clothes* being all that is required to complete the operation.

THE PHILOSOPHY OF THE WASHER AND BLEACHER IS THIS:

We have 5 lbs. of metal, which attains a much greater degree of heat than the water surrounding it, consequently the water *underneath* the Washer becomes hotter and more expansive than in any other part of the boiler, and is thereby thrown to the surface through the tube; thus tending to produce a vacuum underneath the Washer at the bottom of the boiler, into which the water is rapidly drawn.

As it passes along the channels of the Washer, the curved and contracted throats of which prevent its flowing backward, it becomes hotter and hotter, consequently more expansive and more forcible until thrown to the surface, thus producing a powerful suction beneath the clothes *through which* the water *must pass* in a rapid *downward current*, thereby obtaining a *water force* which cannot be obtained by any other method known in cleansing fabrics. Thus, we get a combination. **FIRST, WE HAVE THE DESIRED HEAT. SECOND, PERFECT CHEMICAL ACTION OF THE SOAP. THIRD, FORCE OF WATER—ALL OF WHICH ARE REQUIRED TO THOROUGHLY CLEANSE AND PURIFY ANY FABRIC.**

THE IMPROVED WASHER,

has a perfect fitting pipe, and is a combination of metals which does not become sticky or dirty. It comes out of the boiler as bright as new.

THE CAPACITY OF THE WASHER AND BLEACHER.

There are two sizes: No. 1, the family size; No. 2, suitable for small hotels, restaurants, and barber-shops, boarding-houses, etc.

The Washer is composed of metal and cannot get out of order.

The discharge pipe is 13 inches high, and 1½ in diameter. It throws water in a solid, unbroken stream, at the rate of 6 to 8 gallons per minute. It will work in any flat bottom boiler. It takes only 3 or 4 ounces of soap in 10 or 12 gallons of water, and will wash bed or table linen, a boiler full in 10 to 15 minutes, wearing apparel in from 10 to 30 minutes. Use no chemicals, only good soap and soft water. If the water is hard, it may be softened by a small piece of borax, which is harmless.

FOR LACE CURTAINS this Washer is *invaluable*. It cleanses them as no other process can, and without the slightest danger of injury.

No. 2, or small hotel size, will work in a flat-bottom boiler holding 15 to 25 gallons, and wash of average pieces from 1,500 to 2,000 per day; or it may be used in any smaller boiler that has a flat bottom large enough for it to rest upon.

For hospitals this Washer is pronounced by the medical faculty invaluable, being the most *perfect disinfector* known; leaving the fabrics pure as when new. By bleachers and chemists it is said to be the most efficient method of removing dirt and vegetable matter from fabrics ever known.

THE INDUCEMENTS WE OFFER.

We want a Local Agent in every town in the United States.

We want first-class men as GENERAL AGENTS; men capable of managing one or more counties.

To such we give a duly executed Certificate of Agency.

We furnish descriptive circulars for distribution among families. Also large posters for advertising in public places. Printed directions for using are sent with each Washer.

The retail price of No. 1 WASHER, in New York, is $3.50; No. 2 WASHER, $5.00; No. 1, $24.00 per dozen; No. 2, $36.00 per dozen.

WE SEND SINGLE OR SAMPLE No. 1 WASHERS, PREPAID, TO YOUR NEAREST RAILWAY EXPRESS OFFICE, in any part of the United States east of the Mississippi and Missouri Rivers, also in Kansas, Nebraska, Arkansas, Louisiana, and Texas, for $3.50.

SPECIAL NOTICE.

As to the reliability of this Company, we refer you to the MERCANTILE NATIONAL BANK of this city, or to any Express Company in New York. Also to the Publishers of the following named well known leading journals, viz.:—New York—*American Agriculturist*, Weekly *Sun*, Weekly *Times*, Weekly *Tribune*, Weekly *Witness*, Weekly *World*, *Christian Advocate*, *Christian at Work*; Boston—*Youth's Companion*, *American Cultivator*; Chicago *Inter-Ocean*, Cincinnati *Gazette*, *Andrews' Bazar*, Springfield *Farm & Fireside*, St. Louis *Journal of Agriculture*, Detroit *Free Press*, all of whom have frequently editorially endorsed *us* as well as our *Washer*.

From the *Rural New Yorker*, May 8, 1880:—"Lately we had special reasons for thoroughly testing the character of the Robbins Washer and Bleacher. The test has been fully made up for upwards of a month in the family at the Rural Farm, and has demonstrated the great merits of this machine * * * On every occasion in which it was used, this Washer did everything that is claimed for it in an entirely satisfactory manner. We can, therefore, unhesitatingly recommend it to all our readers who may be in need of a first-rate Washer and Bleacher."

From the N. Y. Weekly *Tribune*, May 19, 1880:—"Washers Again.—We have several inquiries concerning the Robbins Washer and Bleacher. It does exactly what is claimed for it, and is cheap at ten times its cost."

In ordering, write plainly your name, post-office, county, and State. Also the name of the express office to which you wish the Washer forwarded.

CASH MUST ACCOMPANY ALL ORDERS.

Remit by Post-office Order or Registered Letter. We insure the safe delivery of all Washers ordered as above. Money may also be sent by draft on New York.

Send for a sample and secure A BUSINESS THAT WILL PAY YOU WELL.

When you order or write, mention this paper. Address

Bissell Manufacturing Co.

50 BARCLAY ST., NEW YORK, U. S. A.

AN OLD-FASHIONED KNIFE.

Made of **Razor Steel, Hand Forged,** especially for rough work; blades very thick. No corners on handle to wear pockets. **By mail, postage paid, 75 cts.** Soft or flawy blades we replace **free.** 20,000 of these knives are in use to-day by readers of this journal. For lighter work we have knives of equally good steel, 50 and 60 cts. One-blade, like picture, 50 cts.; lighter 1-blade, 25 and 35 cts. Ladies' 1-blade, 25 cts.; 2-blade, 50 cts. Gents' 2-blade pen, 75c.; 3-blade, $1.00. Illustrated list free.

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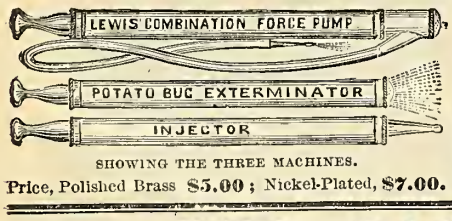

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Lewis' Combination Force Pump.

Three machines combined for half the price of one. The cut represents the three machines embraced in my Pump. $10.00 to $12.00 worth of machines for $5.00. My Agents are making $10.00 to $20.00 per day. Sample sent express paid to any Express Station in the U. S. and Ca on receipt of price. We do this only for a limited period to introduce them rapidly. The Potato Bug Exterminator is sold separate, if desired, $1.25 for Zinc Tubes, and $1.75 for Brass. See displayed Advertisement, in Premium List, page 407. Also Premium No. 104. Send for large Illustrated Circular, Price List, Terms to Agents, etc., to

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Price, Polished Brass **$5.00**; Nickel-Plated, **$7.00.**

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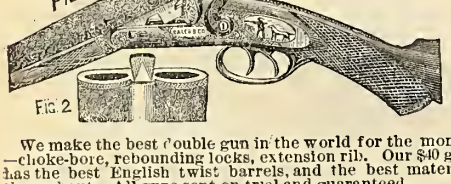

We make the best double gun in the world for the money—choke-bore, rebounding locks, extension rib. Our $40 gun has the best English twist barrels, and the best material throughout. All guns sent on trial and guaranteed.

Price—Best English Twist Barrels, $40. Damascus steel, $55 to $200. Send stamp for Descriptive Circular.

Three-Barrel GUN. **Two Shot and One Rifle.**

Our New Model Three Barrel Gun No. 1880.

A new feature in the Gun line. It is light, compact; from 8 to 10 lbs. in weight. The Rifle is perfectly accurate. It has proved a great success for all kinds of shooting. All guns shipped on trial and guaranteed. Price $75 to $250.

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Is durable, elastic, and has a water-proof surface. We guarantee it. Sample card of colors furnished free. Address

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ARTESIAN WELL DRILLING & MINERAL PROSPECTING MACHINERY. and how to use, is fully illustrated, explained and highly recommended by the "American Agriculturist" in the November Number 1879: Page 465. Send for it. Portable, low priced, worked by man, horse or steam power. Needed by farmers in every county. Good business for Winter or Summer, and very profitable. Can get good wells in earth or rock anywhere. We want the names of men that need wells. Send for illustrated price-list and terms to Agents. Address,

Pierce Well Excavator Co., 29 Rose Street, New York, U. S. A.

$14 SHOT GUN!

The Best Double-Barreled Shot-Gun in the world for the money. Warranted genuine twist, with *flask, Belt Box Wads, Box Caps and Wad Punch.* Also our celebrated Kentucky Rifle for *$12, warranted or no sale.* Send for Illustrated Catalogue and Price Lists to

James Bown & Son, Enterprise Gun Works, *136 & 138 Wood St., Pittsburgh, Pa.*

ESTABLISHED, 1848.

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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from Page 420.

In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations are seldom repeated, as those who desire information on a particular subject can cheaply obtain one or more of the back numbers containing what is wanted.

Back numbers of the "American Agriculturist," containing articles referred to in the "Basket" or elsewhere, can always be supplied and sent post-paid for 15 cts. each, or $1.50 per volume.

The German Edition.—All the principal articles and engravings that appear in the *American Agriculturist* are reproduced in the German Edition. Besides these, there is a special department, edited by an eminent German cultivator. Our friends can do us a good service by calling the attention of their German neighbors and friends to the fact that they can have the paper in their own language, and those who employ Germans will find this Journal a most useful and acceptable present.

Bound Copies of volume 38, and of every previous volume back to Vol. XVI. (1857), neatly bound, with gilt backs, Index, etc., are supplied at $2 each (or $2.30 if to be sent by mail). See Publishers' Notes, 2d cover page.

Clubs can at any time be increased by remitting for each addition, the price paid by the original members; or a small club may be made a larger one at reduced rates, thus: One having sent 6 subscribers and $7, may afterwards send 4 names more and $3, making 10 subscribers for $10.00; and so for the various other club rates.

Terms to New South Wales, New Zealand, Australia, Africa, etc.—To several inquirers. Under the latest revision of the Postal Union Regulations the price of the *American Agriculturist* (either English or German edition), including postage *prepaid* through, will be covered by 7 shillings sterling per annum. This applies to the above countries, and to all others embraced in the General Postal Union. The simplest mode of remittance is by Postal Money Orders, payable in London, to the order of Orange Judd Company. These can be readily cashed in N. Y. City at a slight discount, which the publishers will cheerfully pay. For Club rates, (postage included), see our second cover page, and reckon 22 cents to the shilling sterling.

Hen Manure and Ashes.—"F. H. A." can buy unleached wood ashes at 10 cents a bushel and hen-manure at 15 to 20 cents, and wants to know which he had better devote his energies to gathering.—No doubt the hen manure is the cheapest at the rates stated for most crops. Yet it would be quict worth while to collect the ashes too, especially for application upon grass land. As for night-soil, it will be time enough to collect that when you have exhausted the locality of hen-manure and ashes. Read the brief article on "Manuring with Brains," in the Augnst No., page 302.

How to Preserve Eggs.—"F. B.," Colorado. A common way is to pack eggs in barrels and fill up with water drawn off from freshly slaked lime, allowing some of the slaked lime to go with the water. Such eggs sell at a low price as "limed eggs." Any method for excluding the air will preserve eggs for some time, but they will not be fresh eggs.

Hessian Fly Attacking Rye and Barley.—"C. B.," Nemaha Co., Neb., inquires, whether the Hessian Fly attacks Rye and Barley. We have never observed the fly upon any grain but wheat, but Dr. Chapman is quoted by Harris, ("Insects Injurious to Vegetation") as saying in the Encyclopædia Britannica, that in 1797 they were found west of the Alleghany mountains, and that wheat, rye, barley, and even timothy grass were attacked by them.

How to Kill Canada Thistles.—"J. S.," Henry Co., O. Canada thistles are easily destroyed if one can have patience to keep them cut off as fast as they come to the surface. This may be done by putting some root crop like mangels on the ground, working in it the whole season through, and doing this two years in succession. Smothering with swamp grass or straw will destroy them.

Catching Gophers.—"H. K.," Council Bluffs, Iowa, writes: "I noticed in the *American Agriculturist* that you ask for a better way of destroying gophers, than that of poisoning them. I am very successful in catching them in steel traps, the only trouble is that few people know how to set them properly. When I want to catch one I go to one of the freshest hills I can see, and dig into it until I come to the hole, then I dig out the earth a little until I can see where the hole forks, and carefully remove a little earth from the bottom, so as to allow of the traps being placed level with the bottom of the run, then fill up the unevenness around the trap with some fine earth. I build the mouth of the hole up with clods, and ten chances to one that you will have him by next morning, and some times in an hour or less. I think this is the best way, as it costs nothing but a trap and the trouble of setting it Use no bait.

Hints and Helps for Everybody.—The giving of a large number of labor-saving—and consequently money-saving—appliances, has always been a conspicuous feature of the *American Agriculturist*. In no former years has it given so many as in that now closing. This we attribute to a word of encouragement given early in the year, which we would now in substance repeat. If in the work of the farm, the garden, or in that of the house, you have found any contrivance or device especially useful, no matter how simple it may seem, if it is useful to you it may be so to thousands of others. Such things are usually best described by a drawing. Whether you can draw or not, make a sketch, no matter how rude, if the measurements are put upon the parts, we can make an engraving from it. Every reader can at some time help many others by sending us sketches of useful devices for the farm, garden, etc.

To Grow Weeds.—Thoroughly prepare the soil by plowing, harrowing, and manuring—all this costs money—in fact prepare the soil as if a crop of roots or grain was expected, then sow or plant the seed of some agricultural plant, carrots are good, but turnips will do, and leave the soil to take care of itself. At the end of the season, if there is not a full crop of weeds with seed enough to stock the whole neighborhood it is not your fault, for as a grower of weeds you have done your part. The truth of this statement is founded on an extensive series of experiments, in this and other countries, that settled this point long ago.

Warts.—"J. S.," Baltimore, Md. Warts consist of an enlargement of the papillæ of the skin with a thickening of the epidermis or scarf skin. They appear more frequently on young animals, and affect various parts of the body—the under side of the abdomen, the mammary gland, the eye-lids and lips being the favorite seat of the affection. They often disappear without treatment, but in some cases are quite persistent. When of the pedunculated form (*i. e.* small at the base) they may be readily removed by a ligature, or by twisting, or they may be snipped off with scissors. If the base is broad, repeated applications of strong acetic acid will remove them by a gradual destruction of the epidermis covering the tumor. We have seen cases in which they appeared in a short time, in large numbers, in young animals, on the underside of the body and legs, and as quickly disappeared without the application of any remedy.

Wild Carrot—a Weed.—"J. S. R.," Rainsboro, Ohio, sends very complete specimens of a plant that is becoming very common in his locality, and wishes to know whether it is a native of this country, etc. The plant is the Wild Carrot (*Daucus Carota*), and is just our cultivated carrot which has reverted to the wild state.. This, and its relative of the same family, the Parsnip, are among our most common weeds. In the older States, both are very abundant, but the Carrot is the most so, and often whitens whole fields when in bloom. Being a biennial, it is not so difficult to subdue as some perennial weeds, as it does not spread by the root. It produces seeds in the greatest abundance, and in this manner spreads very rapidly. Each of the little one-seeded fruits, commonly taken for seeds, is provided with a great number of hooks, by means of which it attaches itself to the covering of both men and animals, and is thus readily carried from place to place. It begins to bloom in midsummer, and continues through the season. Its umbels of white flowers, produced in succession, are at first flat, and usually have in the center of the cluster one single dark purple or maroon colored flower. We have occasionally seen plants the flower-clusters of which were purplish throughout. After the bloom is over, the clusters, as the fruits grow and mature, become concave, and at length become of a shape that suggest the children's name of "birds'-nests." If the plant is not allowed to ripen its seeds, it will soon disappear, hence it should be mown while in flower, and if the roots push up other flower-bearing stems, a second cutting must be made. Remember, it will do little good to cut off the flowers from the plants in the fields, and leave ample seed-beds on each side of the roads. If neighbors will co-operate, the Wild Carrot can soon be disposed of. Many may have been troubled by having their cultivated carrots come into flower the first year; this is said to be due to the fact that the seed was raised where the wild carrot was abundant, and the seed-bearing plants had been crossed with the wild. Of the truth of this statement we are not quite sure, but find the belief very common.

Some Things We Can Not Do.—We do not propose to enumerate all the things that we can not do, but recent letters suggest two. We can not find situations in the city for young men. Aside from the fact that 99 in every 100 young men who wish to come to New York had better stay away from it, we have no unfilled place in our own business, and know nothing about the business of others. We can not purchase, or tell parties where to purchase farms. If we wished a farm or a place of any kind, we should at once put our wants in the form of an advertisement, feeling very sure that our next want would be, help to open the many replies that would come to us in answer to the published desire.

The Ailanthus in Nebraska.—"A. H. R.," Willowdale, Neb., writes that he intended to try the Ailanthus, but hesitates, as he has seen a statement in an agricultural journal that the tree is not hardy in "the West," and asks our opinion. We believe that the Ailanthus has not proved hardy in some parts of Northern Illinois, and there may be places in Nebraska where it would not endure the winters. Upon the northern limits of any tree local influences make a great difference, and parallels of latitude do not serve as guides. The Ailanthus flourishes in the climate of Boston, and we think that the injury reported from Illinois is not altogether due to the severity of the climate. Our correspondent, unless he meets with local experience, can easily try the experiment, and if, as proposed, he sets the trees in poor soil, it will be favorable to success.

Exorbitant Charges for Repairs.—"H. C.," a farmer in Orange Co., N. Y., writes us a long and indignant letter upon what he considers exorbitant charges for repairs upon farm machinery. He complains that he pays the price asked for a new machine, but when he needs a small casting he has to pay far beyond what he considers its value, and cites other instances of extortions. We do not see that it would aid our friend were we to give the names of the makers thus accused. The makers of some mowing machines, at least, give a list of every part likely to be needed in repairing, and one can know at the outset the cost of whatever "extras" he may need. In selecting an important machine like a mower, the farmer should take into account two things that are often overlooked; 1st. Are the parts needed for repairs kept in stock; and, 2d, the relative nearness of the factory or agency where they may be had.

Pickles in Glass Jars.—We have many letters asking how to put up pickles so that they will look like those sold in glass jars at the stores. These pickles *look* beautifully, but we can not advise our readers to try to imitate them in all respects. The fine appearance of these pickles is due to two things, the "greening" and to the use of colorless vinegar. The very green pickles are made so by soaking them in a solution of alum, and verdigris. The use of a small quantity of alum, an ounce to every five gallons of water, to harden the pickles, is not objectionable. After the salted cucumbers have been thoroughly freshened by soaking in blood warm water, and changing it every day, until the cucumbers are fresh enough, they are put into the alum water and kept at blood-heat for a day or until sufficiently hard. If they are not green enough, be sure not to use verdigris. The vinegar used is called "White Wine Vinegar," but it is really made from whiskey and water. Its only merit is, that it is colorless, it is a pure acid, and without the fine fragrance and flavor that belong to cider, or even to real wine vinegar. For home use, cider vinegar is vastly preferable; but the pickle makers, for the sake of looks, use the other.

A New Wheat.—G. A. Hisey, of Seneca Co., Ohio, sends half a dozen beautiful heads of an amber-colored wheat which he has raised for two years, and which originated in this wise: "Three years ago," he writes, "a package of wheat was received from the Department of Agriculture, sown, and proved worthless. There were three heads so different and apparently superior, that they were saved and sown. This wheat proves very productive, and the flour is of an extra good quality. It is as early as the Fultz; the straw is stiff and stands up well."—The heads are large, bearded, with eleven spikelets on each side, and frequently three kernels in a spikelet. The grain is amber-colored, above medium size in the samples we have—not plump, but fairly full. It seems to be a variety well worth growing, and should be tried both as winter and spring wheat. If it continues to hold its own with other first class wheats, and is superior in some respects, it should be named and introduced—otherwise not; we have many tolerably good varieties now, and certainly do not want any more.

Pollen Grains Carried by Wind.—Dr. Geo. Engelmann shows the lightness and floating power of the fertilizing dust (pollen) of the pine, in a statement that pine pollen has been found in the streets of St. Louis during a northern storm, from the pine forests on the Red River 400 miles away. Pine trees produce a wonderful abundance of pollen, as any one who has passed through a pine grove, when the trees were in flower, must have observed. The least disturbance given to a branch brings the yellowish dust down in copious showers. The wind has often carried great quantities of pollen to a distance, and deposited in such profusion as to give the idea that there has been a shower of sulphur. We have on several occasions had a portion of the "brimstone" sent us (and the color is not very unlike that of sulphur) from various parts of the country; a glance at the powder through a strong microscope at once shows it to be the pollen grains of pine trees. If those who are disposed to look upon the shower as a warning one of brimstone, would gather a little of the powder and burn it, their fears might be allayed by proving it not to be sulphur.

To Measure Timber.—It is a slow process to obtain the number of feet of lumber in square timber by the actual multiplying together of the three dimensions. All this work is avoided by the use of a Lumber and Log Book by J. M. Scribner, which is made up almost entirely of tables so arranged that the measuring of lumber becomes more a pastime than a tiresome mathematical work. For example, you have a scantling 2½ by 8 inches in area of cross-section, and 19 feet in length. In an instant it is seen that there are 31⅔ feet of lumber in the scantling. If the timber is round the difficulty of accurately measuring it is made equally easy by this little pocket Log Book. For example, a log with an average diameter of 19 inches, and 45 feet long, is seen at a glance to contain 51⅓ cubic feet. This is one of the most useful little books that we have had occasion to use, and at the small cost of 35 cents, should be in the hands of all who have lumber of any kind to measure.

Soap Boilers' Waste.—"P. G. E.," Balt. Co., Md.. writes: "If not too much trouble would you please tell me the value of soap makers' waste; it appears to be principally lime with a large per cent of animal matter, and lumps of soap (I suppose the settlings of the kettles). The soap makers use a large quantity of soda, and it ought to be a strong manure."—Soap boilers waste is a very indefinite term. It is largely common salt (used to precipitate the soap out of the solution in which the saponification has taken place), with some caustic soda. It is worth something, in all probability enough to pay for carting three miles and perhaps enough to warrant paying a few dollars a month for the product of the establishment. The animal matter in the waste does not amount to a great deal. The salt is the main, in fact, almost the only thing of much consequence. Sometimes salt does a great deal of good. Sometimes little or none. The commercial value of such stuff would be as indefinite as its agricultural value.

Central Park.—Much fault has been found with the details of management at Central Park, for several years past. A step has been taken in the right direction in the appointment as Superintending Gardener, of William L. Fischer, who held a similar position in the years when the park was at its best. The public will be the gainer by this restoration of Mr. F. to the position he long and ably filled as Superintendent of the garden.

Drain Tiles.—If properly done, draining is a permanent improvement upon the farm, but it is a paying investment only in such cases. It is not enough to lay the drains in the right direction, with the proper descent, with the proper outlets and well protected. The tiles themselves must every one be perfect, in order that the work may last for generations and give no trouble in the future. If a tile is soft, being half baked, is cracked, or in any way imperfect, throw it aside. Such a tile is like a weak link in a chain, rendering the good ones useless, and when once laid in the drain is hard to find, and very difficult to mend. Use only the best of tiles.

To Break up a Sitting Hen.—"M. C. D.," Falls Village, Conn., writes: "I notice J. S., of Baltimore, Md., tells how to break up a brooding hen; I think my way better. I keep 100 hens, and have a coop four feet square and two feet high. When I gather eggs at night, I put all sitting hens in the coop, and keep them there two days, feed and water well, and let them out, and find that they soon commence to lay again. I have had the care of fowls for 15 years with good success."

October Fair List.

STATE FAIRS

Alabama	Montgomery	Nov. 8-13
Arkansas	Little Rock	Oct. 18-23
Delaware	Dover	Sept. 27-Oct. 2
Georgia	Atlanta	Oct. 18-23
Illinois	Springfield	Sept. 27-Oct. 2
Indiana	Indianapolis	Sept. 27-Oct. 2
South Carolina	Columbia	Nov. 9-12
Texas	Austin	Oct. 19-23
Virginia	Richmond	Oct. 22 29

Industrial and District, &c.

Am. Institute	New York	Sept. 15-Nov. 27
Chicago	Chicago	Sept. 8-Oct. 3
Cincinnati Ind. Ex.	Cincinnati	Sept. 8-Oct. 9
Illinois Fat Stock	Chicago	Nov. 15-20
Indiana, N. Eas'n.	Waterloo	Oct. 4- 8
National	Washington, D.C.	Oct. 4- 9
N. Y. Western	Rochester	Sep. 29-Oct. 1
Ontario, Provincal	Hamilton	Sep. 29-Oct. 4
St. Louis	St. Louis	Oct. 4- 9

County Fairs.

NEW HAMPSHIRE.

Cheshire	Keene	Oct. 5 6
Lempster	East Lempster	Oct. 6
Marlow	Marlow	Sept. 30-Oct. 1
Newport	Newport	Oct. 6

VERMONT.

Wilmington	Wilmington	Oct. 6

MASSACHUSETTS.

Berkshire	Pittsfield	Oct. 5- 7
Franklin	Greenfield	Sept. 30-Oct. 1
Hampshire, Franklin & Hampden	Northamptou	Oct. 6- 8
Housatonic	G't Barrington	Sept. 29-Oct. 1
Martha's Vincy'd	W. Tisbury	Oct. 5- 6
Middlesex	Concord	Sep. 29-Oct. 2
Worcester, N. W.	Athol	Oct. 5- 6
Worcester, West	Barre	Sep. 30-Oct. 1

CONNECTICUT.

Danbury	Danbury	Oct. 5- 9
Hartford	Hartford	Sept. 28-Oct. 1
Killingworth	Killingworth	Oct. 6
New Milford	New Milford	Sept. 30-Oct. 1
Tolland, East	Stafford Springs	Oct. 7- 8

NEW YORK.

Cayuga	Auburn	Oct. 5- 6
Schuyler	Watkins	Sep. 29 Oct. 1
Steuben	Bath	Sep. 28 Oct. 1
Suffolk	Riverhead	Oct. 5- 7
Yates	Penn Yan	Oct. 5 9

NEW JERSEY.

Burlington	Mt. Holly	Oct. 12-15
Somerset	Somerville	Oct. 5- 8

PENNSYLVANIA.

Bedford	Bedford	Oct. 5- 8
Berks	Reading	Sept. 28 Oct. 1
Blair	Altoona	Sept. 28-Oct. 1
Bradford	East Towauda	Sep. 29-Oct 1
Bucks	Doylestown	Oct. 5- 8
Burgettstown	Burgettstown	Oct. 5- 7
Carbon	Lehighton	Oct. 12-15
Crawford	Conneautville	Sep. 29-Oct. 1
Cumberland	Carlisle	Sep. 25 Oct. 1
Delaware	Greenw'd Sta	Sep. 30 Oct. 2
Franklin	Chambersburg	Oct. 5- 8
Greene	Carmichaels	Oct. 14-15
Lancaster	Lancaster	Sep. 29-Oct. 1
Lehigh	Allentown	Sept. 28-Oct. 1
Lycoming & Clin	Jersey Shore	Sep. 29 Oct 2
Mercer	Stoneboro	Oct. 5- 7
Mifflin	Lewistown	Oct. 6- 8
Oxford	Oxford	Sep. 29-Oct. 1
Troy	Troy	Oct. 6- 8
Union	Burgettstown	Oct. 5 7
Union	Lewisburg	Oct. 6- 8
Washington	Washington	Oct. 5- 7
Westmoreland	Greensburg	Sep. 28 Oct. 1
York	York	Oct. 5- 8

MARYLAND.

Frederick	Frederick	Oct. 12-14
Washington	Hagerstown	Oct. 19-22

DELAWARE.

Kent	Dover	Sep. 27-Oct. 3

OHIO.

Allen	Lima	Sept. 28-Oct. 1
Athens	Athens	Oct. 6- 8
Auglaize	Wapakoneta	Oct. 5- 8
Brown	Georgetown	Oct. 5- 8
Butler	Hamilton	Oct. 4- 8
Carroll	Carrollton	Oct. 5- 7
Crawford	Bucyrus	Sept. 28-Oct. 1
Defiance	Defiance	Sept. 27-Oct. 1
Fairfield	Lancaster	Oct. 13-16
Fulton	Tedrow	Oct. 6- 8
Hancock	Findlay	Sept. 29-Oct. 2
Hardin	Kenton	Oct. 6- 9
Harrison	Cadiz	Oct. 5- 7
Highland	Hillsboro	Oct. 13-15
Hocking	Logan	Oct. 7- 9
Knox	Mt. Vernon	Oct. 5- 8
Licking	Newark	Sept. 28 Oct. 1
Logan	Bellefontaine	Sep. 28-Oct. 1
Mahoning	Canfield	Oct. 5- 8
Marion	Marion	Oct. 5- 8
Miami	Troy	Oct. 5- 8
Ottawa	Port Clinton	Oct. 6- 8
Paulding	Paulding	Sept. 29-Oct. 1
Perry	New Lexing'n	Sep. 28-Oct. 1
Pickaway	Circleville	Sept. 28 Oct. 1
Preble	Eaton	Sept. 28-Oct. 1
Putnam	Ottawa	Oct. 6- 9
Richland	Mansfield	Sep. 28-Oct. 1
Sandusky	Fremont	Sept. 28-Oct. 1
Seneca	Tiffin	Sept. 28-Oct. 1
Shelby	Sidney	Sept. 28-Oct. 2
Stark	Canton	Sept. 28 Oct. 1
Summit	Akron	Oct. 5- 7
Tuscarawas	Canal Dover	Sept. 28-Oct. 1
Union	Marysville	Sept. 28 Oct. 1
Van Wert	Van Wert	Sept. 30-Oct. 2
Washington	Marietta	Sept. 29-Oct. 1
Wayne	Wooster	Oct. 6- 8
Wood	Tontogany	Sept. 28-Oct. 1
Wyandot	Up. Sandusky	Oct. 14-15

INDIANA.

Daviess	Washington	Sept 28-Oct 2
Elkhart	Goshen	Sept. 28-Oct. 1
Greene	Linton	Oct. 4- 8
Jay	Portland	Oct. 5- 8
Knox	Vincennes	Oct. 11-16
La Porte	La Porte	Sept. 29-Oct. 1
Morgan	Martinsville	Oct. 5- 9
Noble	Ligonier	Oct. 6- 9
Perry	Rome	Oct. 4- 8
Porter	Valparaiso	Sept. 29-Oct. 1
Stark	Knox	Oct. 4
Steuben	Angola	Sept. 28-Oct. 1
Warrick	Booneville	Oct. 12-16

ILLINOIS.

Carroll	Mt. Carroll	Sept. 28-Oct. 1
Clay	Flora	Sept. 28-Oct. 2
Crawford	Robinson	Sept. 28-Oct. 1
Cumberland	Prairie City	Sept. 29-Oct. 2
Edwards	Albiou	Sept. 28-Oct. 1
Fayette	Vandalia	Sept. 29-Oct. 1
Franklin	Benton	Sept. 28-Oct. 1
Fulton	Canton	Oct. 4- 8
Fulton	Avon	Sept. 28-Oct. 1
Gallatin	Shawneetown	Oct. 5- 8
Greene	Carrollton	Oct. 19-22
Jefferson	Mt. Vernon	Oct. 12-15
Jersey	Jerseyville	Oct. 12-15
Jo Daviess	Galena	Sept. 28-Oct. 1
Lake	Waukegan	Sept. 27-Oct. 2
Lawrence	Lawrenceville	Oct. 6- 9
Marshall	Wenona	Sept. 27-Oct. 1
Massac	Metropolis	Oct. 13-16
Perry	Pickneyville	Oct. 5
Randolph	Sparta	Sept. 29-Oct. 1
Randolph	Chester	Oct. 19-22
Sangamon	Springfield	State fair
Williamson	Marion	Sept. 28-Oct. 1

MICHIGAN.

Alpena	Alpena	Oct. 5- 8
Bay	Bay City	Sept. 28-Oct. 1
Calhoun	Marshall	Oct. 4- 7
Cheboygan	Cheboygan	Oct. 4- 5
Chippawa	Sault Ste Marie	Oct. 4- 5
Clinton	St. Johns	Oct. 4- 5
Genesee	Flint	Sept. 28-Oct. 1
Grand Traverse	Traverse City	Sept. 28-Oct. 1
Hillsdale	Hillsdale	Sept. 27-Oct. 1
Huron	Bad Axe	Oct. 7- 8
Jackson	Jackson	Oct. 4- 8
Kalamazoo	Kalamazoo	Sep. 28-Oct. 1
Lapeer	Lapeer	Sept. 28-Oct. 1
Lenawee	Adrian	Sept. 28-Oct. 1
Macomb	Mt. Clemens	Sep. 29-Oct. 1
Midland	Midland	Oct. 6- 8
Newago	Newago	Sep. 29-Oct. 2
Oakland	Pontiac	Sept. 28-Oct. 1
Oceana	Hart	Sept. 28-Oct. 1
Plainwell	Plainwell	Oct. 5- 8
Tuscola	Watrousville	Sep. 29-Oct. 1
VanBuren	Paw Paw	Oct. 5- 8
Washtenaw	Ann Arbor	Sept. 28-Oct. 1
Wexford	Sherman	Sept. 30-Oct. 1
Violinia Far. Club	Violinia	Oct. 4- 5

WISCONSIN.

Boscobel	Boscobel	Oct. 5- 8
Calumet	Clinton	Oct. 6- 8
Waukesha	Waukesha	Oct. 5- 7

IOWA.

District	Agency City	Oct. 5- 8
Harrison	Mo. Valley	Oct. 6- 8
Jasper	Newton	Sept. 28-Oct. 1
Union	Afton	Oct. 6- 8

KENTUCKY.

Boyd	Ashland	Sept. 29-Oct. 1
Christian	Hopkinsville	Oct 6- 9
Daviess	Owensboro	Oct 13-15
Henderson	Henderson	Sept. 28-Oct. 2
McCracken	Paducah	Oct. 5- 9

MISSOURI.

S. E. District	Cape Girardeau	Oct. 12-16

SOUTH CAROLINA.

Anderson	Anderson	Oct. 20-22
Abbeville	Abbeville	Oct. 13
Barnwell	Barnwell	Oct. 20-22
Newberry	Newberry	Oct. 6- 8
Orangeburg	Orangeburg	
Sumter	Sumter	Oct. 13-15
Union	Union	Oct. 26-28

KANSAS.

Dickinson	Ablieue	Oct. 15-16
Doniphau	Troy	Sept. 28-Oct. 1
Franklin	Ottawa	Sept 29-Oct. 2
Greenwood	Eureka	Oct. 7- 9
Harvey	Newton	Sept. 29-Oct. 1
Jefferson	Oskaloosa	Sept. 28-Oct. 2
Linn	LaCygne	Sept. 28-Oct. 1
Miami	Paola	Sept. 29-Oct. 2
Montgomery	Independence	Sept 30-Oct. 2
Riley	Manhattan	Sept. 28-Oct. 1
Shawnee	Topeka	Oct. 5- 8

The Army Worm.—Prof. C V. Riley read a paper on the Army Worm at the recent meeting of the Association for the Advancement of Science, in which he said: "The fact is demonstrated that the insect hibernates in the larva as well as in the imago state; that there are several annual generations in southerly latitutes. and more than one in New England; that the destructive generation is not always first, as has been supposed; that turning over a field in winter. though productive of much good is not an infallible preventive; that a wet season is not necessary to its excessive multiplication and injurious manifestations. as Fitch maintained; and finally. the true reason why the insect is more injurious in or near low, rank, wet or swampy grass lands is doubtless because such lands are most often neglected and not pastured, and because the moth finds an abundance of nourishment in such places."

Feeding Young Animals.—There is danger of over-feeding young animals and especially with rich food. Young colts, for example, are frequently injured by having too much meal, shorts, etc., fed to them. It is better to give them coarser food. even though they may not look so fat and plump. as their digestive apparatus will not thereby be overtaxed and injured.

A Farmers' Club.—The town of Bedford, Westchester Co., N. Y., has a Farmers' Club which meets the last Friday of every month at 2 P.M., at the house of one of its members. This Club, which was established in 1852, lays out a plan for the year's work by selecting a list of subjects for discussion. This list is printed on a portion of the postal card which the Secretary of the Club uses in notifying the members of the coming meeting, etc. The subject for the monthly discussions for 1880—1881 are as follows: "April, What crops shall we grow?—May, Weeds, and how to destroy them.—June, Fruit and flower show.—July, Farmers' Recreations.—August, The possibilities of 100 acres of average land in the town of Bedford.—September, Renewal of pasturage.—October, Keeping Fruits for family use.—November, Warming and ventilating our houses.—December, Sleds for farm and road use.—January, Farm dogs.—February, Culture and profits of small fruits in this town.—March, Annual meeting, election, miscellaneous business, etc." We commend this method of the enterprising Bedford Farmers' Club to the thoughtful consideration of other Farmers' societies, associations, etc.

Feeding Bran.—In a ton of wheat bran there are 54½ pounds of Phosphoric Acid, and in a like amount of rye bran 68½ pounds. Rye bran is also richer in Potash, hence for food and the resulting manure, rye bran is to be preferred to wheat. It is beyond question that in feeding bran a good part of the profit is made in the superior quality of the manure, and if the direct results of the feeding of bran pay, the increased value in the manure is all clear gain. Bran is an excellent food for the production of milk, and also for young stock.

Corn Smut.—"P. H. F." The trouble with your corn is caused by a parasitic fungus *Ustilago Maydis*, commonly called "Corn Smut." This fungus attacks the ear and sometimes the tassel, and even the joints of the stalks. It changes the grains into large swollen masses of a fine, dark-brown, dusty powder. The only remedy is to cut off the diseased portions and burn them; if left without being destroyed the fine spores will propagate the trouble in succeeding years. Cattle should not be allowed to eat smutted corn in any considerable quantities, as it is found to be injurious to them.

A Principle in Feeding.—All food beyond such amount that is properly digested and assimilated by the animal is a source of loss to the owner, and that in two ways: First, the food is lost; and second, the animal is not kept in the best condition for getting the most out of its feed—its stomach is overloaded and its digestive apparatus more or less disarranged. Just inside the limits of assimilation is the point to have in view in feeding; in this way the animal will have a good appetite, and other things being equal, is sure to give the best returns for food consumed. There is a golden mean in feeding farm stock, which the farmer should find.

American Tea.—Some time ago Mr. Jackson, a Scotchman by birth, and for fifteen years a grower of tea in India, came to this country and was soon impressed with the importance of the American tea question. then under investigation by the Department of Agriculture. Mr. Jackson went through several of the Southern States, examining the soil, climate, etc., and finally bought a plantation in Liberty Co., Georgia, upon which a number of tea plants had been set ont some twenty-five or thirty years ago. The place was cleared up and new tea plants set out, so that at the present time there are 165,000 tea plants under Mr. Jackson's care upon his plantation. Congress has made an appropriation of the small sum of $5,000 to further the culture of tea, and the Commissioner of Agriculture, with the assistance of Mr. Jackson and others, intend to push forward the experiments, and finally hope, and at no distant day, to demonstrate that not only good tea can be grown in many parts of the United States, but that it can be produced with a good profit.

Action of Lime on the Soil.—Lime, as it comes from the kiln, is known as caustic or quick lime—the heat having expelled the carbonic acid gas of the carbonate of lime or lime stone. Upon exposure to the air and moisture this caustic lime absorbs water and carbonic acid gas. and again returns to the carbonate. During this reversion it decomposes vegetable matter and sets the elements of plant food free. It is in this power to prepare food for the growing crop from the vegetable matter in the soil that the chief value of lime resides. The greater the per cent of the lime that is in the caustic state, the more valuable it is for this work. The quicker the lime can be applied after burning the better.

Feeding for Manure.—"W. L.," Duchess Co., N. Y. There is no question that profit can be made by buying steers *of the right kind* in the New York or Albany markets, taking them to your farm and feeding them until the spring and then selling them. There will be profit on the meat made and on the manure left. But profit cannot be made unless the right kind of steers are purchased. Thrifty, healthy, but unripe animals are what are needed, of a kind that will fatten easily. Thin grade Colorado steers, fresh from grass, sell in the New York market at 7¼@8c. per lb., and when fat these bring 9c. per lb. So that there is not only the gain in flesh, but the gain in price on the whole weight as the return for feeding. There is doubtless a good opening in this direction for an increased business, which is done to some extent already, even in the vicinity of New York.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our record kept daily during the year, show at a glance the transactions *for the month ending Sept. 9th*, 1880, and for the corresponding period last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 d's *this* m'th	491,000	7,840,000	4,661,000	316,000	——	1,181,000
27 d's *last* m'th	407,000	7,864,000	5,878,000	63,000	219,000	926,000
SALES.	*Flour*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 d's *this* m'th	436,000	28,214,000*	15,930,000*	212,000	——	2,406,000*
27 d's *last* m'th	419,000	25,166,000*	14,181,000*	239,000	——	2,283,000*

* Including forward delivery.

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 days 1880..	491,000	7,840,000	4,661,000	316,000	——	1,881,000
27 days 1879..	426,500	6,268,000	4,209,000	489,000	206,000	1,287,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 days 1880..	436,000	28,214,000	15,930,000	212,000	——	2,406,000
27 days 1879..	485,000	19,130,000	7,724,000	601,000	14,000	1,835,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush	*Rye.* bush.	*Barley.* bush.	*Oats.* bush	*Malt* bush
Sept. 7, '80..	2,636,742	2,326,245	65,612	15,471	76,976	174,033
Aug. 10, '80..	3,046,607	1,784,441	46,004	25,283	78,910	202,553
Sept. 8, '80..	2,687,933	2,512,454	156,458	26,107	759,686	697,668

4. *Exports from New York, Jan. 1 to Sept 4*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye* bush.	*Barley.* bush.	*Oats.* bush	*Peas* bush
'80.	2,543,000	41,867,000	33,150,000	1,134,000	271,000	379,000	336,000
'79.	2,601,000	36,657,000	23,376,000	2,581,000	118,000	319,000	225,000

CURRENT WHOLESALE PRICES.

	Aug. 11.	Sept. 9.
FLOUR—Super to Extra State	$3 50 @ 4 50	$3 25 @ 4 15
" Super to Extra South'n	3 50 @ 6 75	3 25 @ 6 25
" Extra Genesee	4 60 @ 6 00	4 25 @ 5 75
" Superfine Western	3 50 @ 4 40	3 25 @ 4 00
" Extra Western	4 00 @ 8 50	3 75 @ 8 25
" " Minnesota	4 00 @ 8 50	3 85 @ 8 25
RYE FLOUR, Superfine	4 50 @ 5 05	4 40 @ 5 00
CORN-MEAL	2 50 @ 3 25	2 50 @ 3 25
CORN-FLOUR, ℔ bbl	2 75 @ 3 35	2 85 @ 3 85
OAT-MEAL, ℔ bbl	4 75 @ 6 25	4 50 @ 6 50
WHEAT—All kinds of White	98 @ 1 14	95 @ 1 08½
Red and Amber	90 @ 1 10	90 @ 1 08
" Spring	90 @ 1 09	90 @ 1 02½
CORN—Yellow	48½ @ 63	52 @ 61
" White	51 @ 55	51½ @ 55
" Mixed	45 @ 48¾	50½ @ 51½
OATS	36 @ 46	37 @ 45
RYE	78 @ 84	86 @ 89
BARLEY	Nominal,	75 @ 95
HAY—Bale, ℔ 100 lbs	70 @ 1 10	70 @ 1 05
STRAW, ℔ 100 lbs	45 @ 1 05	50 @ 85
COTTON—Middlings, ℔ lb	11⅝ @ 11⅞	11¾ @ 11⅞
HOPS—Crop of 1880, ℔ lb	40 @ 75	21 @ 40
" old, ℔ lb	4 @ 15	4 @ 14
FEATHERS—Live Geese, ℔ lb	35 @ 48	40 @ 50
SEED—Clover, W. & St. ℔ lb	7¼ @ 8¼	8¼ @ 8¾
" Timothy, ℔ bushel	2 65 @ 2 90	2 30 @ 2 35
" Flax, ℔ bushel	1 33 @ 1 40	1 30 @ 1 35
TOBACCO, Kentucky, &c., ℔ lb	3 @ 14	4 @ 15
" Seed Leaf, ℔ lb	6 @ 40	5½ @ 50
WOOL—Domestic Fleece, ℔ lb	22 @ 50	20 @ 48
" Domestic, pulled	22 @ 50	20 @ 46
" California	15 @ 34	15 @ 35
TALLOW, ℔ lb	6⅜ @ 6½	6⅜ @ 6½
OIL-CAKE—℔ ton	30 50 @ —	29 00 @ 29 50
PORK—Mess, ℔ bbl	14 25 @ 14 50	— @ 16 00
" Extra Prime, ℔ bbl.	11 00 @ 12 00	12 00 @ 12 50
BEEF—Extra Mess	10 00 @ 11 00	10 00 @ 10 50
LARD, in trcs. & bbls, ℔ 100 lb	7 50 @ 8 12½	8 25 @ 8 70
BUTTER—State, ℔ lb	18 @ 27	17 @ 28
" Western, poor to f'cy, lb	15 @ 27	16 @ 28
CHEESE	9 @ 12	9 @ 12¾
EGGS—Fresh, ℔ dozen	12 @ 14½	16½ @ 19½
POULTRY—Fowls ℔ lb	10 @ 13	11 @ 15
" Chickens, ℔ ℔	11 @ 20	11 @ 18
" Roosters, ℔ ½	5 @ 8	5 @ 8
" Turkeys, ℔ lb	11 @ 14	12 @ 16
" Geese, ℔ pair	1 12½ @ 1 62½	1 12½ @ 1 62½
" Ducks, ℔ pair	45 @ 55	40 @ 75
" " ℔ lb	— @ —	10 @ 14
PIGEONS, ℔ dozen	75 @ 2 00	75 @ 1 50
SNIPE, ℔ dozen	— @ —	40 @ 1 75
WOODCOCK, ℔ pair	75 @ 80	1 12 @ 1 25
GRASS PLOVER, ℔ dozen	— @ —	2 25 @ 2 50
REED BIRDS, ℔ dozen	— @ —	15 @ 20
PEACHES, ℔ basket	65 @ 1 75	20 @ 1 00
PLUMS, ℔ quart	4 @ 7	— @ —
" ℔ bbl	4 50 @ 6 00	2 00 @ 8 00
APPLES, ℔ barrel	25 @ 1 75	75 @ 1 50
PEARS, ℔ barrel	1 00 @ 7 00	1 25 @ 6 00
WHORTLEBERRIES, ℔ hf bush	1 25 @ 2 25	2 00 @ 2 50
GRAPES, ℔ case	2 50 @ 5 00	1 50 @ 3 25
" ℔ lb	— @ —	1½ @ 6
POTATOES, ℔ bbl	75 @ 2 25	1 00 @ 1 75
" Sweet, ℔ bbl	1 50 @ 2 50	1 50 @ 3 00
TOMATOES, ℔ box	60 @ 75	25 @ 50
TURNIPS, ℔ bbl	75 @ 1 25	1 00 @ 1 50
" white, new, ℔ 100 bun	2 50 @ 4 00	2 00 @ 3 00
BEANS, ℔ bushel	1 25 @ 2 25	1 35 @ 1 85
EGG PLANTS, ℔ bbl	1 75 @ 2 50	1 00 @ 1 50
PEAS—Canada, in bond, ℔ bu	— @ —	— @ —
" new, green, ℔ bag	1 50 @ 2 50	1 00 @ 2 00
CORN, green, ℔ 100	50 @ 1 50	50 @ 1 00
STRING BEANS, ℔ bag	50 @ 1 25	25 @ 50
CARROTS, ℔ 100 bunches	1 00 @ 1 50	1 00 @ 1 50
BEETS, ℔ 100 bunches	— @ —	1 00 @ 1 50
CABBAGES new, ℔ 100	3 00 @ 8 00	2 00 @ 7 00
ONIONS, ℔ bbl	4 00 @ 5 50	2 50 @ 2 75
SQUASH ℔ bbl	75 @ —	50 @ 75
WATERMELONS, ℔ 100	5 00 @ 18 00	7 00 @ 14 00
NUTMEG MELON, ℔ bbl	— @ —	50 @ 1 50
RADISHES, new, ℔ 100 bunch.	50 @ 87½	— @ —
CUCUMBERS, ℔ 100	25 @ 60	20 @ 30
CAULIFLOWER, ℔ dozen	75 @ 4 00	— @ —

An active busines has been reported in Stocks and Money at, however, unsettled prices, closing up stronger, and more or less buoyantly, with Money ruling excep tionally plenty and low as to price, on call or in the discount form.....Real Estate has been held quite confidently, though not, at present, in urgent request..... Most kinds of General Merchandise have heen attracting increased attention, and generally at firmer rates. Much freer movements have heen reported in Dry Goods, Boots and Shoes, and Hardware. A good demand prevailed for Metals, Laths, Lumber, Lime, Metals, Tohacco, and Groceries.....Cotton has heen in generally moderate demand, at irregular figures, closing more steadily....Wool has heen dealt in quite sparingly, and has further receded in price, closing rather heavily on free offerings.....A limited call has heen noted in Hops, which have been quite unsettled as to values, closing in favor of huyers. ....Hay, and Straw in fair demand....Seeds, more sought after.... Clover quoted higher... Petroleum has been fairly active, hut unsettled, leaving off more firmly..... Naval Stores have been held higher, but not very active. ....A brisk business has been reported in Breadstuffs, which, however, have fluctuated widely, closing for most kinds of grain and flour lower, and, as a rule, weak. Speculation in Wheat, Corn, and Oats has been more animated. The export movement in Wheat and Corn has been to a fair aggregate, the Wheat mainly of the new crop of Winter. Cable advices have recently been unfavorahle to the export interest. More inquiry has been noted for Spring Wheat for shipment. New crop No. 2 Chicago Spring Wheat was received here on Monday, Septemher 6, by Messrs F. Edson & Co. Samples were exhibited on 'Change, for which the asking price—as per sample—was $1.04 per bushel. The quality was deemed very fine, and the offering averaged 60¾ lbs to the imperial bushel. ....Corn has been in reduced stock, toward the close, and quoted stronger Rye likewise hardened perceptibly in price near the close, on a light offering and good demand. New crop Barley has not heen in much request, thus far, and values have heen more or less nominal, as they have been for months past, or since the previous season ended. Oats have experienced frequent and radical changes, due largely to speculative influences, closing for prompt delivery quite heavily, and, in the option line, more firmly. .. Hog Prodncts have hcen quite active, and quoted dearer, speculation continuing on a liberal scale, especially in Western Steam Lard. Beef and Beef Products, quiet at irregular figures. Ocean freights have been seriously depressed and unsettled, on freer offerings of accommodation, and a comparatively moderate demand, closing weak, including hy steam to Liverpool, 5¾@6*d.* per bushel; to Bristol, by steam, to 6½@7*d.* per bushel; to Antwerp, by steam, to 7¼@8*d.* per bushel, and sail to Cork, for orders for vessels of average carrying capacity—say 3,000 to 4,000 qrs.—5*s.* 3*d.* per qr. of 480 lhs....The visihle supplies of Wheat—emhracing the hoards at lake ports, in transit, and on the seahoard—at latest dates, emhraced about 14,405,400 bushels; of Corn, 19,183,350 bushels; of Rye, 665,750 bushels; of Barley, 255,900 hushels, and of Oats, 1,592,000 bushels, against on January 31, an aggregate of 30,100,000 bushels Wheat, 13,100,000 bushels Corn, 979,000 bushels Rye, 4,155,000 bushels Barley, and 3,080,000 bushels Oats.

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Aug. 16	11,356	;	6,657	27,061	24,426
Aug 23	14,049	37	4,582	36,520	25,097
Aug. 30	12,883	32	4,716	36,638	26,283
Sept. 6	12,994	45	3,961	37,554	31,836
Total for 4 Weeks	51,282	227	19,916	137,773	107,642
do. for prev. 5 Weeks	71,225	483	25,108	184,423	119,099

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per week	12,820	57	4,979	34,443	26,910
do. do. *last Month*	14,245	97	5,022	36,885	23,814
do. do. *prev's Month*	14,164	87	5,271	34,766	27,096

Prices for beeves the past four weeks were as follows:

WEEK ENDING	*Range.*	*Larger Sales.*	*Aver.*
Aug. 16	6½@10½c.	8¾@ 9¾c.	9¼c.
Aug 23	6½@10¼c.	8¾@ 9¾c.	9¼c.
Aug. 30	7 @10½c.	8¾@ 9¾c.	9¼c.
Sept. 6	6¾@ 9¾c.	8¾@ 9¾c.	9⅜c.

Beeves.—The average numher of heeves handled per week has been considerable lower than for some months. The export trade has been light hut is increasing. Good choice native steers sold for 9½@10½c. to dress 56@57 lhs. Poor to fair ones brought 7½@9¼c. Stags, old dry cows and rough oxen sold at 2¼@3½c., live weight, and 7@7½c. to dress 55 lhs., Texas and Cherokees at 7@7½c. to dress 55 lbs., and Colorados 8@8½c...**Milch Cows.**—The nnmher sold has been very small, as the month closes the tone of the market is firmer. Fair cows are quoted at $30 to $40, with prime ones at $45 to $55.... **Calves.**—The average per week has been helow that of previous months. Grassers and Buttermilk calves sold at 2@2¾c.; fed calves, 3@4c., veals 4@6½c., and a few selections at 6¾c....**Sheep and Lambs.**—The market has been firm and fairly active for good sheep, especially for heavy wethers for export, while that for common sheep and ewes has been dull. Fair sheep sold at 4@4¼c., good to choice, 5@5½c. Poor lambs 4½@5½c.; prime 5½@5¾c.; extra 5⅞@6c....**Swine.**—For good hogs the market was firm at the close of the month, with larger sales. Western grass hogs quoted at 4@4½c.; corn fed. 5@5½c.; choice lots of Ohios, 5⅝c.

The Horse Market.—The receipts are increasing quite rapidly and the demand is more active than for months. Prices remain steady with a slight advance for fine driving teams. A numher of fine lots of imports have arrived. These animals have been selected with special care for hreeding purposes.

Prices of Feed.

Cotton-seed meal	per ton,	$30.00
Linseed-cake meal	"	37.00
Middlings	"	24.00
Bran	"	23.00
Corn-meal	"	23.00

Prices of Fertilizers.

Nitrate of Potash (95 per cent), per lh	8 @8½c.
Sulphate of Potash (potash 44 per cent), per lh.	3½@4 c.
do. do. (potash 27½ per cent, per lb.	1½@1¾c.
German Potash Salts (potash 12 to 15 p. c.), p. ton.	$14.00@16.00
Muriate of Potash (potash 50 per cent), per lb.	2 @2¼c.
Nitrate of Soda, per lb	4¾@5 c.
Sulphate of Ammonia (25 per cent), per lb	4½@4¾c.
Dried Blood (ammonia 13 per cent), per ton	$40.00@45.00
No. 1 Peruv. Guano, Lobos, ammonia, standard, ℔ ton	46.00
do. do. guaranteed, ℔ ton, cargo M	56.00
Soluble Pacific Guano, per ton	45.00
Excelsior Fertilizer Works, Fine Ground Raw Bone	55.00
Mapes' Complete Manure (clay soils), per 1,000 lbs	25.50
do. do. do. (light soils), per 1,000 lbs	25.50
do. do. do. "A" Brand (wheat), ℔ 1,000 lbs.	20.00
do. Tobacco do. do.	52.00
do. Fruit and Vine Manure, per ton	37.00
do. Asparagus Manure, per ton	51.00
Homestead Superphosphate, per ton	40.00
do. Tobacco Grower, per ton	60.00
Banner Raw Bone Flour, per ton	45.00
Stockbridge Rye Manure, per ton	45.00
do. Wheat Manure, per ton	45.00
do. Seeding Down Manure, per ton	40.00
Bowker's Wheat Phosphate, per ton	40.00
Walton, Whann & Co.'s Raw Bone Phosphate, per ton.	40.00
Gypsum, Nova Scotia, ground, per ton	8.00

Muck and Manure Compost.—Several inquirers are interested to know the proportion of manure to mnck in composts. That depends—1st, on the quality and texture of the mnck; 2d, on the richness and heating quality of the manure. If the muck is qnite dry and pulverulent, one load of horse manure to five of muck will bring on a good heat soon after the heap is laid up, especially if it gets a good soaking rain. But if the mnck is lumpy and the manure stale and perhaps mixed with much litter and cow dung, one to three will be hetter. After any heap has come to a good heat, cut it over, add more muck if you think it hest, and let it heat again. Tankings, ground scrap cake, castor pomace, hen dung, pigeon dung, and many similar nitrogenons and easily fermenting substances are snhstitutes for stahle mannre, and may he used in smaller qnantities.

Tannery Lime, etc.—"C. C.," of Pittshurgh, Pa., writes: "I can hny spent lime of tannery at $1.50 per 2,000 lhs.; Gas lime, 40c. per load, say 30c. per 2,000 lhs. (latter to he hauled 5 miles); Fresh burnt lime, 14½c. per bushel, say $3.50 per 2.000 lbs.; Dry swamp muck, 30c. per load, say 30c. per 2,000 lbs., delivered at R. R. station, ½ mile from farm. My soil is light, sandy loam, well surface-drained, bnt very much run down in fertility. I will make considerable barn-yard mannre this winter, but I want to know which of the above will he most valuable, and how they should he used to hest advantage, separately or together."—We advise the nse of the spent lime from the tannery, composted with the dry swamp muck, and of the swamp muck to compost with the stable mannre. These composts may he made separately, or the ingredients may be laid up in the same heap, if you avoid bringing the mannre in direct contact with the lime. After the first action, when the heap is worked over, it will not make any difference. The tannery lime, we conclude, has more or less animal matter, hair, etc., mingled with it, but has not lost all of its caustic character. If it is old and rather inert, it will he hest to compost it with both mnck and stable manure, as hy itself it wonld have little action on the muck. See items on Swamp Mnck in this numher.

Changing the Crop.—The advantages of a rotation, either regular or irregular, result from a number of considerations, some of the more important of which are as follows: First, different crops require food elements in different proportions—thus potatoes require much more potash than wheat, and this crop grown for a succession of years would exhaust the natural supply much more rapidly than when only grown with a number of other crops between, not demanding a large amount of potash. In the second place a rotation, when managed properly, enables one crop to prepare food for another. Clover sends long tap-roots into the suhsoil which act as pumps to bring up food elements that may he nsed hy surface feeding crops that follow. Thirdly, as different crops require different methods of cultivation, the rotation can be so arranged that there will he a constant supply of labor distrihuted throughout the whole season. For the same reason the variety of crops permits of a better cultivation and improvement of the soil, the destruction of weeds, etc.

Time to Give Milk.—The length of time a cow should give milk depends somewhat upon the animal, her natural capabilities, and the food which is furnished her. Some cows will give milk the year round, while others will need to go dry for months. As a rule, it is better for a cow to he "dried off" some weeks—fonr to six—before calving, thus giving her time to flesh up and gain fresh strength for another season of work. The time thus spent will not he lost, as the more ahundant flow of milk and its greater richness afterwards will testify.

Young Men in Horticulture.—From time to time we have had letters from young men with tastes for horticultural pursuits, asking where they could go for instruction in the propagation of plants and other matters relating to plant culture. Generally we have not been able to aid such applicants, but at present we know of an opening where the proper applicant can receive such instruction. Address "Horticulturist," care of the Editor of the *American Agriculturist*.

Moore's Early Grape.—A basket of this recently introduced grape was received September 6th, from the originator, Mr. John B. Moore, of Concord, Mass. The condition of the fruit demonstrated its poor carrying quality. The berry is very large, the clusters medium and compact, the flavor good. It drops from the cluster somewhat and bruises easily, quite as easily as the Concord, we should judge, but is doubtless one of the valuable early grapes for private planting on a small scale.

Prizes at Fairs for Trotting Horses.—Without saying a word in favor of the offering of prizes for mere speed, by our Agricultural Societies, we cannot but commend a common sense suggestion of the President of the "National Association of Trotting-horse Breeders." Instead of offering prizes for "Roadsters," "Horses of all Work," etc., when the great point is trotting ability, he suggests that prizes be offered for "Standard-bred Trotters," which are registered. The Agricultural Societies would thus aid the horse-men in establishing the American trotting horse as a distinct breed, which they are now taking the proper course to accomplish—next to performance, pedigrees cannot be too highly esteemed.

Keeping Cider Sweet.—The methods usually resorted to, to prevent fermentation in cider, like adding mustard seeds, suspending a piece of lean beef, the use of Sulphide of Lime, all add, more or less, a disagreeable flavor to the cider. The Preserving Powder, advertised in another column has the advantage of imparting no flavor while it is efficient and active.

Catalogues Received.

The following are the special autumn catalogues that have been received up to the time of going to press:

NURSERYMEN.

BAIRD & TUTTLE, Bloomington, Ill. Agents for the Bloomington Nurseries. A fall wholesale list.

CHARLES BLACK & BRO., Hightstown, N. J.—A special strawberry list; also peaches and apples.

EVERETT BROWN, Bluff Point, Yates Co., N. Y.—A special grape catalogue, offering the standard varieties.

BUSH & SON & MEISSNER, Bushberg, Mo., besides a grape catalogue, issue a special list of novelties which contain, among other new things, the remarkable seedlings of Mr. Rommel. This firm has established nurseries in Europe to supply the demand for American varieties.

JOHN S. COLLINS, Moorestown, N. J.,—An illustrated catalogue of small fruits of all kinds.

ELLWANGER & BARRY, Rochester, N. Y.—Their autumn lists contain strawberries and small fruits generally; also a new pear, the Frederick Clapp, is figured and described.

G. H. & J. H. HALE, South Glastonbury, Conn.—A strawberry catalogue, with a number of new varieties.

A. HANCE & SON, Red Bank, N. J.—A special strawberry catalogue, with an interesting treatise on culture.

T. S. HUBBARD, Fredonia, N. Y.—Grape vines and other small fruits, with a colored plate of the Prentice grape.

G. S. JOSSELYN, Fredonia, N. Y.—A full stock of small fruits.

JOHN B. MOORE, Concord, Mass. A catalogue of small fruits, "Moore's Early" grape, asparagus, etc.

T. V. MUNSON, Denison, Texas.—General nursery stock, with Southern specialties.

J. H. RICKETTS, Newburg, N. Y., sends detailed descriptions of several of his new seedlings.

E. P. ROE, Cornwall, N. Y.—His catalogue of small fruits is as full as usual, and always interesting reading.

JOHN VAN LOON, New Amsterdam, Wis.—A choice collection of small fruits, some specialties in seed, with the *American Agriculturist* as a premium.

G. ZIMMERMAN & SONS, Buffalo, N. Y.—A very full list in all departments. The "Catalogue of the Pine Hill Nurseries" is a neat one in many respects.

SEEDSMEN AND FLORISTS.

J. LEWIS CHILD, Queens, N. Y.—Catalogue of Dutch and other bulbs.

D. M. FERRY & Co., Detroit, Mich.—Catalogue of bulbs, greenhouse plants, and seeds for autumn planting.

J. M. THORBURN & Co., 15 John street, New York.—A bulb catalogue: one of the fullest we have received this year; illustrated.

JAMES VICK, Rochester, N. Y., in the form of a floral guide, issues a very handsome bulb catalogue; also greenhouse plants, seeds for fall planting, winter bouquets, and various florist's supplies.

MACHINERY, LIVE STOCK, AND MISCELLANEOUS.

ARAD BARROWS, JR., 1403 South Front street, Philadelphia, Pa.—Price-list of wrought iron field, lawn and garden rollers.

JAMES BEGGS.—Steam engines, portable forges, etc.

JACOBS BROTHERS, Columbus, O.—Machinery and evaporators of sorghum.

GEORGE W. TAFT, Abbington, Conn.—Road sprinklers.

JOSEPH HARRIS, Rochester, N. Y.—Cotswold sheep and Essex pigs.

J. C. VAUGHAN, Chicago, Ill.—Dried flowers, grasses, baskets, etc.

FOREIGN CATALOGUES.

F. C. HEMEMANN, Erfurt, Prussia.—A special catalogue of new seeds.

B. FADDER & JAHN, Berlin, Prussia.—Papers for bouquets and for fruit plates; interesting as showing what an immense trade there is in such articles.

FRANCIS MORTON & Co., Liverpool, England.—A large and well illustrated catalogue of agricultural iron work, including fencing and gates of many kinds, stack roofs, iron buildings, churches, etc.; showing to what an extent iron is employed for such purposes in England.

The Farmer's Guide and Account Book.

How deep, how much, etc., etc., to sow or plant 70 different articles, and the fertilizers required. Systematic farming, gardening, and accounts.—Highly commended by Ex.-Gov. Horatio Seymour and the agricultural schools. Price $1.25, and sold by booksellers generally. NATIONAL BLANK BOOK CO., 66 & 68 Duane St., New York.

THEODORE SCHUSTER,

419 Herkimer Street, Brooklyn, N. Y.,

SOLICITS ORDERS FOR

SEEDS OF ALL KINDS, APPLE AND PEAR STOCKS, Etc.,

For account of MR. I. W. WUNDERLICH, in Frankfort-on-the-Maine, Germany, and also asks for

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Winter & Spring **FLOWERING BULBS** | FALL **SOWING SEEDS** AND

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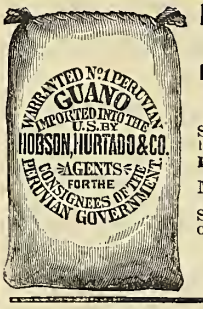
FREE TO ALL.

A. D. COWAN & CO.,

AMERICAN SEED WAREHOUSE,

114 Chambers St., New York.

A CHOICE LOT OF PEACH, APPLE, AND other Fruit Trees and Plants at Bottom Prices. Price list free. R. S. JOHNSTON, Stockley, Del.



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Farm Implements and Fertilizers.

No. 1 Peruvian Guano; Standard. No. 1 Peruvian, Lbbos brand.—**Russel Coe's Superphosphate of Lime. Complete Manures, Metropolitan Fertilizer, Pure Ground Bone.** Sold at lowest trade price, by the ton or cargo. Send for 1880 Pamphlet.

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JOSEPH GILLOTT'S STEEL PENS.

Gold Medal, Paris, 1878.
The Favorite Numbers, 303, 404, 332, 351, 170, and his other styles.
Sold throughout the World.

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YOU CAN GET

A WATCH	OR	PEN KNIFE.
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NE PLUS ULTRA

AUTOMATIC WINDMILLS,

Ten feet diameter of wheel; **one horse power; machine made** of **best iron, oak** and **bass wood; patent duplex compensating regulator** and **stroke;** the crowning perfection of wind engine, securing **steady running** in all winds and adapting stroke to **elevation** and **quantity** of water required. Of **simple** and **solid** construction, not liable to derangements:—has **no traps,**—is elegant, effective and durable: packed for shipment in **twelve cubic feet;** gross weight 400 lbs. Are capable of working a pump of 3-inch cylinder, raising water 50 feet through 1½ inch pipe, or 75 feet with 2½ inch pump and 1¼ inch pipe, or 125 feet with 2 inch pump, in abundance for any farm or for two or three houses. Warranted to be in no respect inferior to any other mill in the market or money will be refunded in every case.—P. S.—Either postal order or cash must accompany all orders, or endorsement of responsible merchant of same town. Price $50.00, less $5 drawback to cover freights.

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STANDARD WIND MILL.

VICTORIOUS AT

Phila., 1876—Paris, 1878.

25 Years in Use.

GUARANTEED SUPERIOR

To any other Windmill Made.

17 Sizes—1 Man to 45 Horse Power.

Adopted by the leading R. R. Co.'s and by the U. S. Govt. at Forts and Garrisons.

$3,500,000 worth now in Use.

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We manufacture the old reliable **Stover**—the well tried, strong, durable self-regulating, solid wheel **Wind Mill,** which took *the* Centennial Diploma, as well as a Medal. We refer to the **Official** Centennial Report. Also O. E. Winger's Improved $20.00 double Feed Grinder, which is operated by Pumping Wind Mills—a novel and perfect Mill for grinding all kinds of grain for stock and house use. Agents wanted everywhere. Send for catalogue **B.** Branch Factory at Kansas City, Mo.

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Successor to STOVER WIND ENGINE CO.,
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The IRON DUKE WIND MILL is the Best and Cheapest

for the following reasons:

It is ALL IRON. Is Self-Regulating. Will pump with less wind than any mill ever made. Will not shrink, warp, split, decay, and will stand more work than any mill extant.

DON'T BUY till you have received our Circular.

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THE CHAMPION
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The Best in the World.

It is perfectly self-regulating, and presents no unnecessary surface to the wind. Pronounced by millwrights and mechanics to be superior to all other mills made. Do not buy until you have investigated the Champion. All information regarding the mill free.

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Porous Drain Tile.

2 to 7 inches VENT. For Prices address
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WROUGHT IRON FIELD & GARDEN ROLLERS.

I manufacture a full assortment of these articles of wrought boller iron. On exhibition at Pennsylvania State Agricultural Fair, F to 10 For Sale by JAMES C. HAND & CO., Market Street, or

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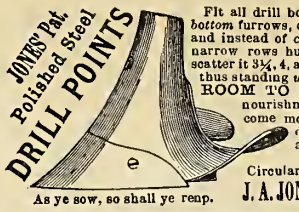
AGENTS WANTED EVERYWHERE to sell the best **Family Knitting Machine** ever invented. Will knit a pair of stockings, with **HEEL** and **TOE complete,** in 20 minutes. It will also knit a great variety of fancy-work for which there is always a ready market. Send for circular and terms to the **Twombly Knitting Machine Co.,** 409 Washington St., Boston, Mass.



Fit all drill boots, run level, cut *flat bottom* furrows, cover with *mellow* soil, and instead of *crowding the seed* into narrow rows but *one inch in width,* scatter it 3¼, 4, and 5 inches; the plants thus standing *wider* apart, have more **ROOM TO STOOL,** derive more nourishment from the soil, become more vigorous, and produce better developed average heads.

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"I was in my brother Tom's wheat about a week ago, and I really believe there is one-third more wheat where it was drilled with your points. Tom told me he had measured some rows and found *sixty-three* heads in the same length of row, against *forty-two* of the old way of drilling."
H. CLAYTON (Pres. Citizens' Nat. Bank of Middletown, Del., and farmer).

"I got five bushels to the acre more wheat where I drilled with your points than with the old style. I gave them a fair test, showing you no favor."
JOSHUA CLAYTON, Jr., Mt. Pleasant, Del.

"There were *less small heads* where I sowed with your shovels." ALEX. UNDERWOOD, Mechanicsburg, Pa.

"I never cut such grain before. I can not keep from praising your points." A. H. MARR, Milton, Pa.

"Have made the finest crop reaped since I have had the farm in hand." LLOYD LOWNDES, Easton, Md.

CHEWSVILLE, Washington Co., Md., Sept. 8, 1880.
"I started two sets of your points in my fields to-day (Nos. 4 and 5), and had eighteen visitors to see them work; you should have been here to hear the praise; they worked to a charm. I would no more think of going back to the narrow points, than I would to the wooden mould-board."
N. SENER.

LEWISTOWN, Mifflin Co., Pa., Sept. 6, 1880.
"The No. 3 points work splendidly. My farmer and neighbors who saw them at work, are all very much pleased with them." W. C. BRATTON.

UNIONVILLE, Frederick Co., Md., Sept. 4, 1880.
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"NEW" Hydraulic Ram!

The only Horizontal Ram made. Will do good work on light fall. Send for circular.
ISAAC B. MILLINGTON & CO., Chester, Pa.

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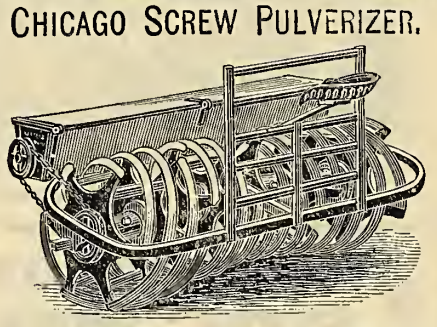

Does Pulverization pay?

ABILENE, KANSAS, Nov. 10, 1879.
I seeded 3,400 acres of wheat with these machines....The stand of wheat is now the best I have ever seen on new land. R. J. WEYMESS, Trustee.

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This year I harvested, on 190 acres, 6,100 bushels of wheat. ....In my opinion the Screw Pulverizer increased the crop one-third over what I could have got by any other method.
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Send for pamphlet with cuts, and over sixty letters from men who have the machine. Address,

Chicago Scraper & Ditcher Co.,
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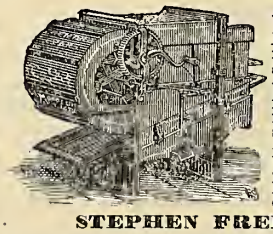
The "Centennial" Fanning Mill.



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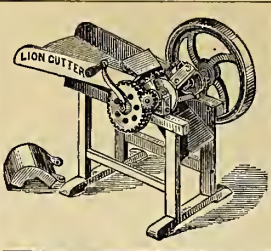

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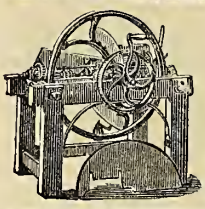

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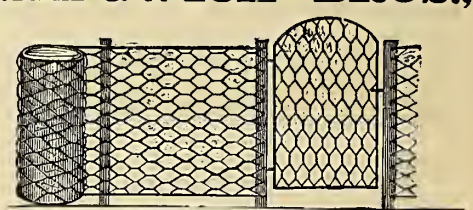

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BUTTER COLOR!

Has taken **Thirty Highest Prizes,** *three* **Gold Medals** at World's Fairs. Is prepared in *vegetable oil, used to color the* **finest butter** made in Europe, and fast superseding all other Coloring in America. *Does not color the buttermilk,* makes butter beautiful, **greatly** *enhances its value.* **No alkali** used. One dozen bottles, with directions for making finest butter, **free to druggists or dealers. HANSEN'S LIQUID CHEESE COLOR** and **LIQUID EXTRACT OF RENNET:** No Manufacturer or Repacker of Butter can afford to neglect these Danish preparations. **GANG PRESSES** and **SELF-BANDAGING CHEESE HOOPS:** All royalties paid by us. **$625 CASH PREMIUMS** at late International and State Dairy Fairs for very best Apparatus for Manufacturers of Butter and Cheese. Acid Butter-milk, and Skim Milk saved.—**"ANTI-HUFF" EXTRACT,** a great success, makes finest Skim-Milk Cheese. Send for new Circular.

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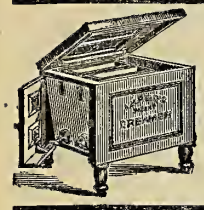

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The simplest, best, and most convenient yet invented.

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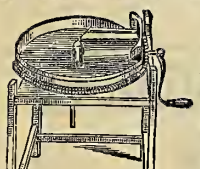
BUTTER WORKER.
Lilly's Patent.



Won **First Premium** at the American Institute Fair, New York, in 1873; at the Fair of the Penn. State Agricultural Society in 1879; at the Dairyman's Fair at Delhi, N. Y., in 1879, and at County Fairs innumerable. Acknowledged to be the **only self-feeding and reliable machine in the market.** Descriptive circular sent free.

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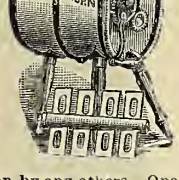
HOUSE-KEEPERS, ATTENTION!
THE GLOBE WASHBOARD AND THE IMPROVED UNION CHURN

Are the best in the world. Neither have any equals. Over 600,000 **Globe Washboards** sold in 1879. No more sore hands or torn clothes on inferior washboards. Buy it and try it. The Improved Union Churn is the perfect butter-maker. Easier and quicker than by any others. One trial will convince any one of the fact.



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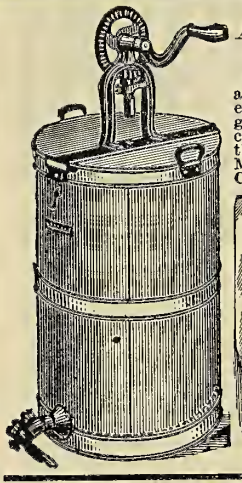

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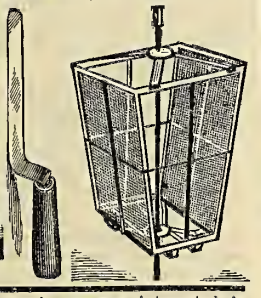

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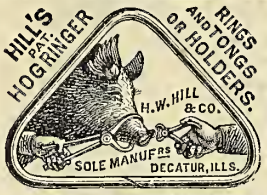

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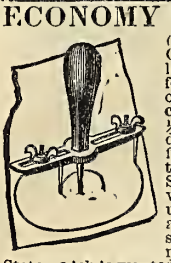

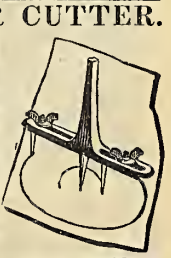

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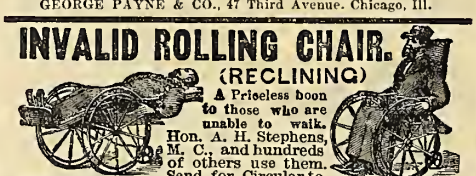
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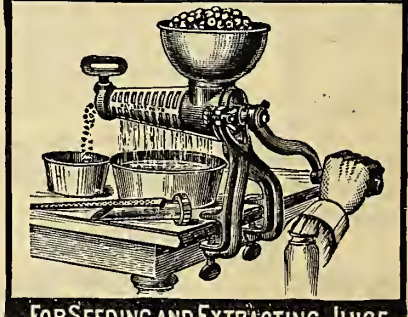
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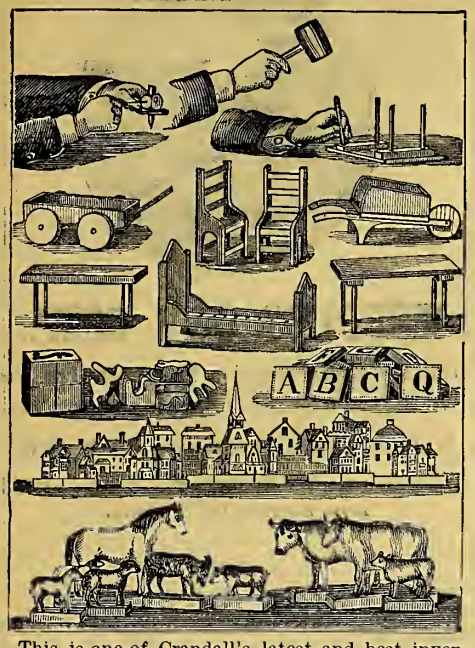

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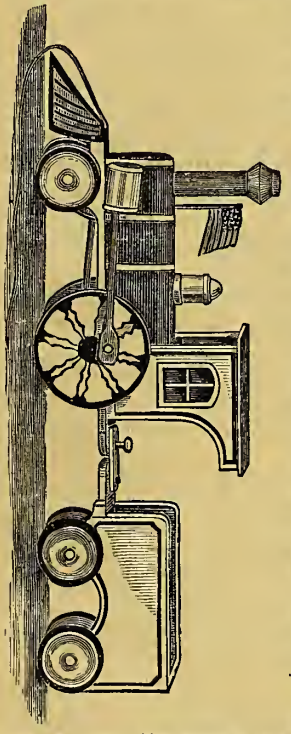

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The United Presbyterian (Pittsburg, Pa.)

"Winter Greeneries at Home" is a very neat little work by Rev. Dr. Johnson, of Allegheny, Pa., devoted to Window Gardening, and largely the fruit of the author's successful experience in thus beautifying his own residence. The culture of flowers in an ordinary dwelling requires a loving care, and perhaps a native tact, not always purchaseable with the best and most practical of books, but such volumes are calculated to develop these qualities where they have hitherto been latent, as well as to supply the place of much tedious experience, and obviate the dangers of many trying failures on the part of others. *Country Gentleman*, (Albany.

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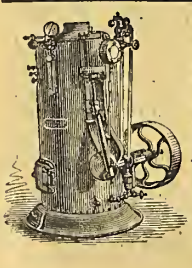

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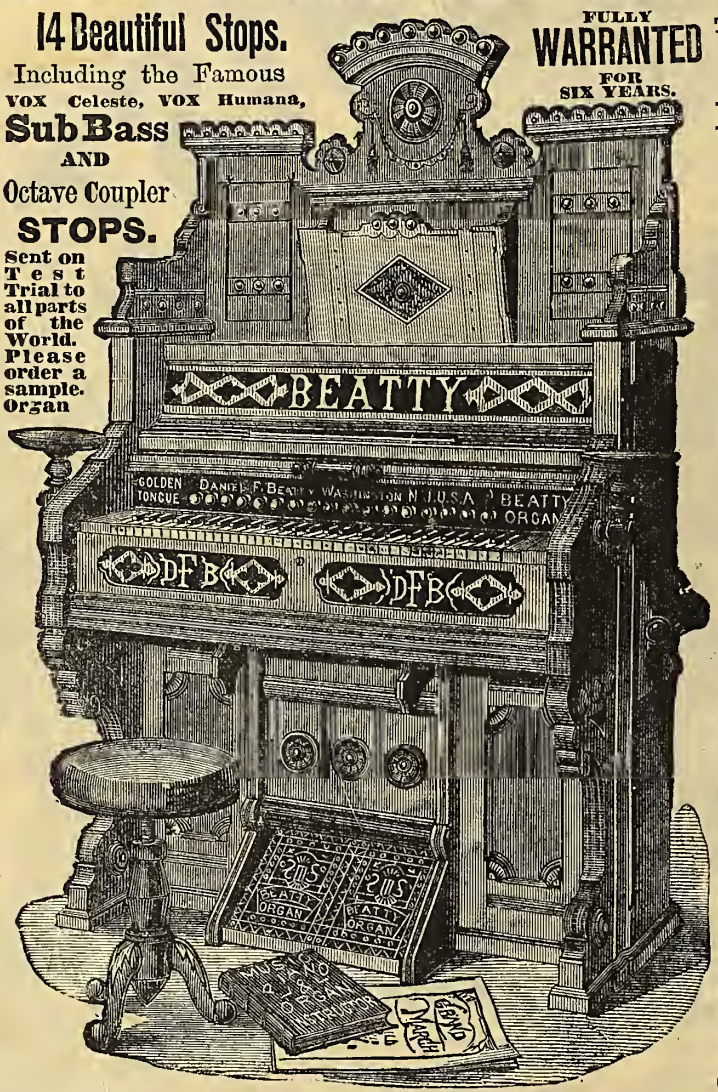

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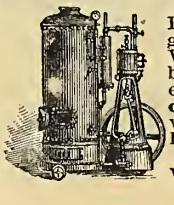

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TAKING THE THANKSGIVING TURKEY.—DRAWN BY W. M. CARY.—*Engraved Expressly for the American Agriculturist.*

Instituted by the Pilgrim Fathers as a day of prayer and praise in memory of the bountiful crops of the first harvest in their new home, Thanksgiving Day has grown with the nation's growth, and become a National Holiday. It was originally a farmer's festival, but now the observance has become so general that the home that is not upon the farm is none the less the scene of thanksgiving joys and praise. One of the most attractive features of this memorial day is the gathering of the scattered members of the family at the old home, there, under the parental roof, to give hearty thanks to the Giver of all good for the ingathered crops, and the great blessings of national growth and prosperity. To many of us Thanksgiving means a feast of the fat things of the land—the best pumpkin made into the best pie, and the finest turkey of the flock served up with cranberry sauce, and all the good things that go to make the feast complete. Thanksgiving Day and turkey have been associated together so long, and that for excellent reasons, that it seems as if the noble bird would almost know the day appointed by the President for his dissolution. From the time he is hatched out of the speckled egg, through his early confinement in coops and pens, and later, the wider range and roaming over the fields—through all this time, every act of kindness and care shown him by his owner is prompted by the amount and sweetness of the meat he will put upon the platter at the "Thanksgiving Dinner"—the center-piece of the loaded board. In the accompanying engraving the artist shows us one of the last scenes in the tragic life of the fated turkey. It is doubtless Thanksgiving eve—the night before the feast. With one or two exceptions, all the turkeys of the flock, save those reserved for the next season's breeding, have been sold and are already dressed and in the market. The hour has come for the *exceptional* turkey—the largest one of them all, it may be; watched and fed with more than average care, because selected weeks before for the part he is soon to play at the joyful reunion of his owner's relatives and friends. The engraving shows how, in many a farm-yard, the boys and the lantern go forth to catch and kill the fat and innocent bird. "Thanksgiving" is preëminently a home festival, and though as yet a distinctively American institution, it deserves not only to be preserved to us with all its sacred recollections, but it or some similar custom should be spread throughout every land where the ties of family friendship prevail. For the past few years we have been blessed with full crops, and at no time in the history of our Republic have we had more reason for hearty rejoicing than at the close of 1880. We hope the day will be observed by every member of the great *American Agriculturist* family, whether he dwells in New England, the birth-place of the institution, or on the frontier, where the thanks perchance may be for the first harvest from his land.

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AMERICAN AGRICULTURIST.

NEW YORK, NOVEMBER, 1880.

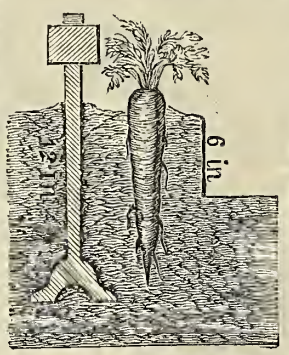
Hints for the Work of the Month.

[*The Hints and Suggestions in these columns are never copied from previous years, but are freshly prepared for every month, from the latest experience and observations, by practical men in each department.*]

The Season throughout the Northern States is likely to be variable. We may have Indian Summer, and we are quite sure to have hard frosts, storms, and snows. All these vicissitudes are to be provided against, and taken advantage of.

The Harvesting of Root Crops is to a great extent accomplished this month. *Potatoes*, by the first week of November, are, or should he, all out of the ground, except possibly south of Pennsylvania and along the coast. If the ground freezes, some are inevitably injured by the severe cold.

Beets and Mangels are protected hy their broad leaves (from frosts) which would otherwise injure them so as to cause decay; but as soon as the leaves are wilted the growth of the root is checked, and they should he harvested and pitted at once. The same is true of *Carrots*. They hear very little freezing, and the frosting of the leaves is the signal for rapid gathering. One of the most convenient methods is to plow a furrow close to the row—and run a subsoil-plow close on the other side, as shown in the accompanying engraving. The carrots may then be pulled unbroken, and with perfect ease.



LOOSENING CARROTS WITH A SUBSOIL-PLOW.

Turnips may be left longest before digging, hut repeated freezing makes them pithy and innutritious.

Pitting Roots.—Trenches four feet wide and two feet deep are of a size well suited to either a moderate or severe winter. If put in too large heaps, or too deep pits, roots heat, and of course do not keep well. Cover with straw, and lightly with earth patted down to shed rain, and ventilate well.

Root Tops and small roots may be fed to cows and young stock quite freely, before they heat, which they will do quickly if in heaps. It is well to lay them on the north side of some building, where they will not become sun-dried, for thus they will be kept much longer than in any other way.

Soft Roots and hollow ones, which cannot be pitted, are profitably fed to either pigs, sheep, or young cattle, and also to cows that are dry.

Neglected Work.—Should any of the proper work of last month have been neglected, such as sowing winter grain, husking corn, etc., it may perhaps still be done. Corn-husking may be done at any time. Rye may be sown as long as there is a prospect of a fortnight of open weather. Wheat sown in November often does well, so if the ground is prepared your plans need not be changed, for the probabilities are in favor of good crops, though late sowing has nothing to recommend it.

Thrashing must be done generally when you can get the thrasher—so it is well to speak for it in season. The sooner grain is thrashed the more there will be of it. It should, however, be thoroughly dry. Small farmers will improve rainy days as they come by thrashing by hand. Besides this suitable

Rainy-day Work is painting and cleaning of tools, oiling and mending of harness, cutting kindling wood and such like jobs common upon every farm.

Manure and Compost.—The season is still favorable for the growth of the compost heap. Weeds and all sorts of hedge-row rubbish ought to be burnt, for the seeds are ripe, and we can not depend on their germinating in the compost heap. Grassy sods, the tops of the roots which can not be fed out, leaves, and wood or swamp mould, and all such things add both bulk and value to the heap.

Draining upon upland may now he prosecuted more conveniently than at any other season of the year. Labor can be hired cheaply, and the work can he rushed if desirable. Never lay these drains less than three and a half feet deep, if it can be helped. See article on levelling and laying the tile in the March No., *American Agriculturist*, page 97.

Ditching.—Should the season continue dry, ditching in the swamps is in order. In muck swamps dig the main ditches deeper and broader than necessary, say two or three feet wide at the bottom, and eight or ten at the top, and throw out the muck on one side to lie and freeze until spring, while the tussocks and sods are thrown by themselves, to be burned next summer when thoroughly dry.

Poultry.—The Poultry year culminates this month. With plenty of corn, and something to pick up in the fields, poultry increase rapidly in weight, and should be forced so long as the weather remains moderate. When the thermometer goes lower and lower, they will stop gaining suddenly, and hardly hold their own, though consuming more feed. Of course that would he the time to kill if every body would not kill at once. Those who have warm, airy houses for their poultry can profitably hold on to them until the reaction comes and prices rise; but those who watch the market may take advantage of fluctuations as they come at any time.

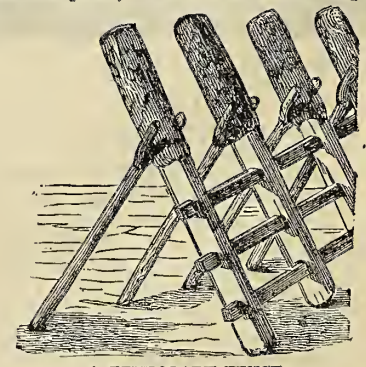
Buildings may be repaired and painted, if that has not been already done. The season is favorable for painting, as very little dust and no insects are likely to adhere to the paint.

Horses, though they may still he kept at pasture, if desirable, should have a shed at least to retreat to during hard storms. Do not work them at all on the road if they have colds or the prevalent influenza, absurdly called "epizooty," the best cure for which is a warm, airy stable, and perfect rest, although they ought to have a good run in the pasture during the warmest part of every day.

Cows which are giving milk must have an increase of feed. Mangels, or sugar beets, are best. Cut them in slices, and sprinkle them with bran, and feed half a bushel more or less at a time, after the cows have filled themselves with hay or corn, fodder or grass. Soft turnips may be fed to some cows at milking-time, and not flavor the milk. Keep up the flow of milk, if possible, especially with young cows, by feeding meal, bran, and roots.

Burning Brush and Rubbish.—Where this has been cut along the fences on the road, or between fields, late in the summer and is now dry, burn it, and spread the ashes on grass land. It only harbors vermin, mice, rabbits, and insects.

Fence Rows.—There is no better season than this for cleaning up fence rows. Take the fence up altogether. If you need a fence, set it up again a rod away with the tops of the posts on the ground and the butts in the air (supposing it to be a post and rail fence), supporting it by forked stakes against the posts, as shown in the accompanying


A TEMPORARY FENCE.

engraving. This leaves all clear, and the old ivy-grown, briary, weedy, stony strip can be grubbed and plowed and cleaned up, sowed to grass, and the fence replaced. It is no great job, and if forty rods a year could be treated in this way every year, it would soon make a difference in the looks of most farms that would be much for the better.

Young Stock need not be housed until real cold weather sets in, but they should have a warm shed to lie in at night, and be kept in first-rate condition through this month with turnips, fed tops and all.

Sheep bear more exposure than any other of our domestic animals (not even excepting horses, not worked) that is, exposure to the weather, but not without shelter from storms. The ewes ought to be in lamb by this time, and must be kept doing well. Half a pint of corn a day each will go far towards keeping them in good condition. Weed out all those which show signs of weakness, have poor teeth, etc., and fatten them if you can.

Pigs.—It is much better to kill early than late. As soon as cold weather comes on, pigs will gain very little, if any, and often lose during cold storms. Therefore, crowd them if not fat enough to kill. Feed occasionally pulverized charcoal, to keep their digestive functions in tone; keep them clean and warm, and coax them to eat every ounce possible.

Poultry need to be treated much in the same way. That is, fattened and killed early, if intended for market. Though prices usually go up steadily after the first of January, yet the additional cost of fattening in December, or of holding poultry after it is fat, is but rarely paid for by the higher price. Warm quarters are essential to winter laying.

Notes on Orchard and Garden Work.

This month brings the orchardist and gardener to the close of one year's work, and to the beginning of another. While he is occupied with the storing and sale of the crops that have been gathered this season, he must lay plans, and make preparations for the season and the crops to come. The spring is short and the work then to be done so great, that it is the most hurried season of the year. This shortness and pressure of spring time is in a measure compensated for by the comparative length and leisure of autumn, which allows one to do much of the so-called "spring work" well in advance. So gradual is the approach of winter that frequently the work suited to October may be carried on until well in December, in which case the Notes about fall work given in October apply with equal force during the present and next month.

Orchard and Nursery.

Fall Planting.—Late October and early November are often very favorable to the planting of trees. The soil is still warm from the accumulated heat of summer; it is rarely too dry, and if properly drained not too wet. If in planting we cut, as we should, every broken root back to a sound place, in a short time these roots will have overcome the bad effects of the removal, and will be ready for vigorous growth in the spring. South of 40°, in most years, planting may be done during the greater part of the year without any injury to the newly set trees.

Young Trees planted this fall, or even last spring, should have earth drawn up around them, making a mound 12 to 18 inches high. This mound of earth should be free from sods, and weeds, and will serve the double purpose of a support to the trees against the winds, and prevent the mice from gnawing them.

Draining.—Water should not be allowed to collect on the surface; a few furrows in the right place will carry it away rapidly. Underdraining, to be the best and most economical, should be all finished up before hard freezing weather sets in.

Cions may be cut as soon as the leaves fall, and should be packed in saw dust or sand, and kept in a cool place. Select only from thrifty trees of the best varieties. If you do not have them it is better to buy than to use second-rate stock.

Labels upon trees should be looked to, that they do not get lost or become illegible. The old kind of pine label, marked with lead pencil while a coat of white paint is fresh upon it, is about the best. Zinc strips are used and preferred by some.

Seeds of Trees for planting in the spring are best preserved in boxes of sand, the boxes being kept in a cool and dry place, out of the reach of mice.

Stocks for Root Grafting.—The grafting of roots is done during the winter and the stocks should be in a handy place. Take up the stocks before the ground freezes, assort and tie them in bundles, afterwards put in boxes, and place them in the cellar.

Rabbits if left to themselves can do much harm. A protection of the trees may be made of lath, or tarred paper may be tied about the trunk with fine wire. Smearing the trees with blood will keep away the rabbits, as meat is very distasteful to them. A fat rabbit in November is good eating, and a small bounty will induce the boys to trap and otherwise secure many of these injurious animals.

Manuring.—The orchard needs to be fed as well as any other field when a yearly crop is removed. Circumstances will determine the kind of manure to use. That from the stable is always in order; good bone, ashes, green crops turned under, are all of great value, and one or more should be used.

Keeping Fruit.—The cellar of the house, if possible, should not be used for storing large quantities of fruit, but if used there should be ample ventilation to carry off the carbonic acid produced by the ripening fruit. A uniform temperature of about 40°, or just safely above freezing, accompanied with a dry atmosphere, is the best. Pears should be stored in drawers where they can be inspected occasionally. Apples, if properly picked and packed in barrels, ought to keep undisturbed.

Make all Snug for Winter.—Clear up all rubbish in the orchard....Pick up the refuse fruit and feed to the pigs, that the contained insects may be destroyed....Fences and gates, especially of young orchards, need to be cattle proof at all seasons.

The Fruit Garden.

Currants and Gooseberries.—The material used in the propagation of currants and gooseberries are the pieces removed from the bushes at the time of pruning. The bushes should be pruned so soon as the leaves fall—a month or so ago—though many put it off until much later. In making the currant cuttings, use only the growth of the present year, cutting it into six-inch lengths. The cuttings should be set quite close together in boxes of earth, the soil being deep enough to allow the cuttings to be two-thirds beneath its surface. The boxes are to be set in the cellar and kept dry during the winter, and in the spring the cuttings should be put in trenches four inches apart in the rows.

Blackberries and Raspberries.—The dead stems were cut away soon after the berries were off. If not done then, through neglect, do it now, and tie up the new canes for the winter. Tender varieties must be covered this month. This may be done rapidly by two men, one bending the canes down in the direction of the row, while the other throws earth upon them, either in sufficient amount or only to hold them down for the covering plow soon to follow. New plants of raspberries and blackberries are usually supplied by suckers, allowed to grow for the purpose. Roots may be cut from the old plants without injury. These root-cuttings, three or four inches in length, are then placed in layers, in boxes of earth, and stored in the cellar. The cuttings are set in open ground in early spring.

Grapes.—The sooner the grape vines are pruned, after the leaves are off, the better. Young vines, set last spring, should bear one or two shoots—if the present growth is half an inch thick, two shoots may be left. Cut the vines back to three buds or so, leaving extra ones to provide against accident. There is no rule for pruning old vines; the condition of each vine must determine it. Leave enough buds to produce sufficient shoots to bear leaves and fruit clusters. The buds left after pruning represent the new growth of next year. The cuttings are made from the prunings, and should have two buds at least; tie them in bundles, label, and cover in earth in the cellar. Many varieties, like the Concord, grow rapidly from such cuttings, when planted in the open ground in spring; others, with harder wood, as the Delaware, are best raised in propagating houses with special care.

Strawberry plants should be covered before freezing weather sets in. Straw, salt or marsh hay, or leaves may be used, placing the material thickly between the plants, but only lightly directly over the plants, as too much covering smothers them.

Kitchen and Market Garden.

Should the present month be a mild one, many of the October Notes will be seasonable now, and to avoid repetition we refer the reader to them. In a nutshell: Do now whatever the weather will permit. So soon as a crop is off plow up the soil and leave it without harrowing, as the exposure of the ridged surface to the weather improves its texture.

Asparagus.—Cut and burn the tops and give the bed a generous covering of well rotted manure.

Celery should be dug and stored before the ground freezes hard. A trench is dug in a dry place, a foot or so in width, and deep enough to bring the tops on a level with the soil. Place the plants in it close side by side with no earth between. Cover slightly with straw or leaves, and as the cold increases add more covering until it is a foot thick. Boards may be put over the straw, lengthwise of the trench, to keep out the rain, and make it easier to get at the celery if there is snow on the ground.

Cabbages may be left out until heavy frosts come, when they should be pulled and placed heads down in rows, and the heads covered with a few inches of earth. A plow may be used in covering them; two furrows being turned over the heads, doing most of the work. For a small lot a common method is, to dig a trench in a dry place, set the cabbages in the trench, close together, and cover at first with a little straw. As the weather gets colder put on more straw, and as the winter sets in complete the covering with more straw and a layer of boards over the whole. Soft cabbages, if planted in this way, will come out in fine condition.

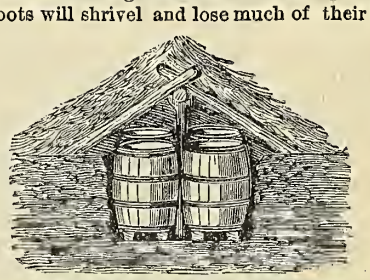
Parsnips.—A portion for present use may be dug and stored in sand in the cellar, the rest can remain in the ground as freezing improves them.

Parsley may be grown for winter use in the kitchen where there is no greenhouse, by means of a keg with a number of holes bored in its side. A crown of parsley is put at each hole, the roots extending into the sand inside the keg, while the tops grow out of the holes. Place the keg in a sunny window, and properly watered it will give a supply of parsley and make a cheerful kitchen ornament besides.

Carrots and Beets should be dug before they have been frozen, and stored in the cellar or root pit.

Turnips are not much injured by frosts, and may be left until all of the more tender garden vegetables are cared for, after which they should be dug and pitted, or put in the vegetable cellar.

Cellars containing roots should be kept cool or the roots will shrivel and lose much of their freshness. Where the roots are put in small pits, it is convenient to use barrels, as shown in the engraving.



A ROOT CELLAR WITH BARRELS.

Cold Frames are for protecting the plants in a dormant state through the winter—not for growing them. The sashes should not be put on until the freezing weather sets in. Tilt up the sashes whenever the temperature of outside will permit this, giving a circulation of pure air among the plants.

Flower Garden and Lawn.

The Lawn should go into winter quarters with a good length of grass to serve as a mulch and protection. If manure is used as a top dressing, only that which is thoroughly composted and free from seeds of weeds should be applied. It may be put on at any convenient time during fall or winter.

Leaves.—The lawn and paths should be raked after the leaves have fallen, and the litter thus gathered used for protecting tender plants. This raking improves the looks of the grounds as well as secures a valuable covering for plants.

Perennial Weeds, like dock, plantain, etc., should be removed from the lawn when the ground is soft from the autumn rains. A long chisel with a handle is handy in removing their roots from the soil.

Evergreens show to the best advantage at this season of the year, after the leaves of the deciduous trees have fallen. A diversity of form and variety in shades of green, are pleasing, and can be obtained with care exercised in the selection of the plants, their location, grouping, etc., and pruning.

Beds and Paths may be laid out, and much of the work upon them done at this season of the year.

Winter Protection.—A few evergreen boughs, sufficient to break the winds, and afford shade, are found to answer the purpose of protection, avoiding the danger of smothering the plants which often resulted from the old way of covering with a thick layer of straw, closely packed about them.

Bulbs to be housed for the winter should go in before the ground is frozen. The hardy ones, like the Hyacinths, Tulips, etc., should be planted early.

Greenhouse and Window Plants.

Insects, when found on the plants, should be destroyed at once by using tobacco water, soap suds, etc. Plants, if neglected, may be ruined in a short time. Success in the fight with insects depends largely upon one's promptness and perseverance.

Climbers, like English Ivy, Tropæolum, German Ivy, etc., add very much to the beauty of a greenhouse or window. Select the plants now.

Hanging Baskets should be placed where they can have an abundance of light and sunshine, and not near the stove or register. If the light comes from one side, the basket ought to be turned every day

Watering.—The successful culture of house plants depends largely upon the care in watering. The pots should have some pieces of broken pots or oyster shell put in the bottom to provide proper drainage; with good drainage there is but little risk from over-watering. A thorough wetting when water is needed, is far better than keeping the surface moist, by frequent "sprinkling." Hanging baskets may be dipped into a tub of water.

A Gradual Change.—We should have much fewer complaints of failure with house plants if they were less subjected to sudden changes, both when they are brought in from their summer out-of-doors, and while in the house in winter. When the air of the room is changed it should be done without allowing a cold current to fall upon the plants.

Bee Notes for November.

BY L. C. ROOT.

WINTERING THE BEES.—In most northern sections, bees that are to be kept in-doors should be placed in winter quarters during the present month. Those to be wintered out-of-doors, should be properly packed and protected. We have so often described, in our previous Notes, the proper manner of preparing bees for out-of-door wintering, as well as a suitable place in-doors, that we shall omit it at this time; and besides every bee-keeper who needs a detailed description should have the necessary information at hand, in some practical work, where it is given much more minutely than we could do in the space allotted here. I simply wish to say that the subject will require the closest attention and study if success is to be attained, as *perfect* success in wintering is yet far from being established even with the most thorough bee-keepers. A system of wintering, by which one shall have none but good strong stocks in the spring, will go farther in insuring a profitable season than any thing else connected with bee-keeping.

HONEY.—Now that the bees are comparatively idle, we may well consider some general questions of interest to all. A correspondent says: "I have had a number of persons ask me about how bees make honey. Also concerning the relation of feeding sugar to honey-making. Does the sugar become honey, or is it changed to honey by the bees?"—These inquiries are evidently made by parties who are practical bee-keepers, and are of very much interest to all classes. When it is remembered that bee-keeping although yet in its infancy, is becoming a very important industry, and that honey is produced by hundreds of tons each season, we see that the public, who are the consumers, may well desire to know something of the subject. In answer to the first question, correctly speaking bees do *not* make honey, they simply gather it. We have endeavored, in our Notes heretofore, to give an idea of the different classes of blossoms from which bees gather honey most freely. It is well known that honey varies in color and quality. It will be found that these variations are according to the different sources from which it is obtained. For instance, the basswood, or linden tree, blossoms very freely, and yields honey of a superior quality in great abundance. The largest part of the best and whitest honey placed upon our market is gathered from these blossoms. Later in the season, buckwheat, which is also a free bloomer, yields honey abundantly, but, unlike the basswood, it is of a dark color and entirely different flavor. There is as marked a contrast in these two qualities of honey as there is between the finest white syrups and ordinary molasses. There is a large class of consumers who are particularly fond of buckwheat honey, choosing it in preference to the lighter grades. While in most localities these two kinds constitute the larger part of the honey gathered, there are very many classes of flowers yielding honey in various degrees of quality and quantity. While it is true that these different varieties of honey undergo some change in being gathered from the flower, as indicated below, it is also true that they retain their original characteristics, and can easily be identified.

"Is sugar made into honey by the bees?"—Certainly not. The fact that the bees handle sugar-syrup, and place it in the cells, does not make honey of it. If sugar syrup, or molasses, is furnished to them, and they store it in their combs, it will be found to be the same there, just as certainly as the fine linden honey or darker buckwheat are found to possess their peculiar qualities. When the honey is gathered from the flowers it is quite thin. It is so handled by the bees that the moisture is evaporated, and when stored in the cells the air is all excluded, so that it will remain in a liquid state, and not become candied, as it does when exposed to the air. Syrups would likewise undergo a change in these respects.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

We Don't Like It.—It is impossible to attend many of the fairs, coming crowded as they do, into two or three weeks, and scattered far and wide over the whole country from Maine to California. The last one we were at reminded us too much of a place to sell goods at retail, rather than a display of the wares to please and instruct the visitors, and a healthy striving for the prizes. Mr. Smith was there occupying a permanent place in the machinery hall with a soap to cleanse the skin, and was calling upon every one who passed him to buy and try it. Another man, Jones, the cutler, was there with a full assortment of Jack-knives, and was making it a point to close out his stock at cost. What right has a drygoods or hat store to the space—and much of it in many places—in any building in an Agricultural Fair. We fail to see how it helps agriculture; it is not for the greatest good of the greatest number. Shop keepers we should suggest had better go the rear and let their places be filled with those things which cannot be constantly on exhibition in the street windows of every city, large or small.

Read the Advertising Columns.—Letters are daily received by the editors, asking where pigs, fowls, seeds, fertilizers, machinery, etc., can be procured. We consider all the information of this kind that is given in the advertising pages sufficient, if those needing anything will only look there; and can not find room to repeat what is already plainly told elsewhere. Every page of the *American Agriculturist*, including the covers, is interesting reading, and should all be carefully examined every month. In addition to looking after what one may want, the reading of what others have to say, in offering their wares, etc., starts up some new idea in the mind of the reader.—When writing to any advertiser, always tell him in what paper his advertisement was seen.

Show of the N. Y. State Agricultural Society.—Much of the success of such a show depends upon the weather. The exhibition may be fine, or it may be meagre, to the majority of those who attend it makes little difference; but the attendance really is "the making" of the show. This year two days were unpleasant—showery, and muddy under foot—with slender receipts and a discouraging outlook. The next two days were all that could be desired, and happy thousands crowded the gates all day, and went home tired, and gratified. Thus the show was a grand success, and as an exhibition it was most excellent. There were indeed many fine herds of cattle unrepresented, but the credit of the cattle of the Empire State was well maintained. The striking feature of the show was perhaps the prominence of the Herefords. We have never before seen so many of this fine race of beef cattle together. Excellent specimens they were too. The large-uddered kine of Holland made a great show also, as did the trimmest, most compact and beautiful of all neat cattle—the Devons. These last are old favorites which seemed to lose favor a few years ago, but now seem to be gaining again as is meet. Shorthorns, Ayrshires, Jerseys, and Guernseys, were well represented, by some of the finest herds in the State, with some from New England. The show of Horses contained an unusual number of heavy draft horses, both of the Clydesdale and Norman breeds. We were not especially impressed with the excellence of either the sheep, pigs, or poultry, though the entries were numerous and the show good. There was a remarkable exhibition of plows. The forms being more or less new and varied. They were furnished with the "skim" instead of the coulter, almost without exception, and in other respects the show of implements was of universal interest. The Dairy Department seemed meagre, the Horticultural, good, and on the whole the show was fully up to the high average of the recent exhibitions of this excellent Society.

"Snobbishness" or "Laziness."—An item going the rounds, says that a young man in Madison, Wis., bought six collars and a neck-tie, weight under 4 ounces, and through snobbishness or laziness, ordered them sent to his residence; he wouldn't carry a parcel in the street. They were sent in a heavy freight wagon; two men laboriously carried the parcel into the hall, and inquired if it should be left there or carried upstairs. His "affianced" happened to be there, and saw the exhibition. Served him right.....A certain lady (?) bought a spool of thread, and ordered it "sent home"—over half a mile. .. A farmer of our acquaintance, an old subscriber to the *American Agriculturist*, was stopped in the rain by a wealthy man, who haggled about the price of turnips for several minutes, finally getting them down from 33 to 25 cents a bushel, and then ordered a peck; and ended by asking that half of them be yellow turnips for his wife, and half white ones for himself! We saw their *delivery*, in a immense cart, drawn by 17 yokes of oxen, with a driver for each yoke, each driver carrying and wielding a long whip, and vigorously shouting, "haw, gee, g'long, etc." The oxen's horns were ornamented with white and yellow ribbons, and the white and yellow turnips were marked by ribbons of corresponding color tied around them! The cavalcade made a tour of the town and three wide circuits before successfully backing up squarely to the purchaser's gate. Four men delivered them in a huge basket, and the farmer refused to receive more than 6¼ cents, the contract price. A mechanic, previously engaged, was present to chip off the quarter of a cent to make the "change" right. The seller and drivers—neighboring farmers—then went to a hotel, "put out" their teams, and had a bounteous dinner together.

Did it Hurt Him?—The above suggests another incident. The writer of this lives some distance in the country, going to the city daily, or as needed by business there, in company with hundreds of others. On the train goes a man reputed to be wealthy and liberal, who almost always has a parcel in hand—some purchase for home, a weekly package of books or papers for his Sunday School, etc. On the same train travels a man whose family dresses extravagantly, and he himself fares sumptuously at the noon lunch; but he is always "short" when a subscription paper goes through the cars for a public or benevolent object. One evening, seeing the first-named gentleman carrying a rather heavy package, he said, "Why don't you send home your parcels by express? I always do; I would not carry them." The simple but withering reply was, "My friend, I have done this for more than twenty years; *it does not hurt me any;* I have saved not less than $2,000 thus, and when I want to give one or five dollars to any good object, I find it in my pocket." Did it hurt him? The *American Agriculturist* thinks it did him good.....In Philadelphia, in a store one evening, a young man just starting in business, bought a parcel of a few pounds weight, and taking it up, said, "I would like to give some one a shilling to carry this home for me." A gentleman, from whom the young man purchased some of his stock in trade, *on credit*, stood near, unrecognized, and immediately accepted the offer. Arriving at the house and receiving the shilling, he remarked, "young man, when you want any other such parcel carried, please call on me," handing him his card, which read, "Stephen Girard" (the millionaire). The lesson was a useful one to the business man, and, taken to heart, it made the learner a most successful man in all his after years.

Plants for Name.—"W. G.," Warsaw, La. The plants sent belong, as you think, to the order *Scrophulariaceæ*. The large flowered one is *Gerardia flava* or Downy False Foxglove. The other belongs to the same genus, and is the Purple Gerardia, or *G. purpurea*. We could not tell the species of Sunflower without specimens.

BY SPECIAL REQUEST.

"20 Days Grace."

The "Bakers' Dozen."

"Please for once *extend* your offer to new sub-"scribers for a few days after Election. My neigh-"bors have 'politics on the brain' just now, which "is all right and proper for true American citizens "at such a time; but this stands in the way of our "promoting good farming and home comforts, by "efforts to get people to taking and reading your ex-"cellent and most useful Journal.—The extra num-"bers, the 'Baker's Dozen' as you call the 14 "month's subscription for the price of 12 months, "is one helpful argument with some slow people—"those who have not learned the utility and value "of reading such a paper...."

Such in effect is the language of one of our friends, and the expressed wish of many others. The Publishers respond by announcing that *the extra offer will be extended a little beyond Election,*

Thus:

Every New Subscriber for 1881 (Vol. 40) received before November 20, will be Presented with this paper for the last Two Months of 1880. (We will, for this purpose, keep the plates of this number in printing order until November 19).

NOTE

FIRST.—*This Offer extends to* **all** *New Subscribers for* **1881**, *including those sent in on Premium Lists.*

SECOND.—*All new subscribers for* 1881, *arriving between Nov.* 20*th, and Dec.* 5*th, will be presented with the paper for December.*

THIRD.—*To put all on a par, those living anywhere too remote to get this paper before Nov.* 1*st, may have the* 20 *days beyond the time of receiving* THIS *number, to collect and forward new subscribers and get the Two extra months.*

Now for the Premiums.

As the election excitement will soon be over, now is the time to push on the making up of lists of names to secure the valuable articles offered in our Premium List. Many can do something at the poll gatherings. The premiums are open to *all*, everywhere, and any body may get them.

Over 25,000 Men, Women, and Children have secured one or more *most desirable and useful articles* **without cost,** simply by collecting some names of subscribers for the *American Agriculturist*, and every person they have thus induced to become a reader has been benefited. *Anybody else may do the same.*

Our friends are doing nobly, already; the premium names received since September 1st, are double last year even, despite the election excitement. There is every indication of coming abundant prosperity for the country generally, and this Journal will do all possible to help promote that prosperity.

Our plans are very large for *greatly advancing* the value, beauty, and *usefulness* of the **Fortieth Volume,** and our friends, in soliciting new names as subscribers, and in making up premium lists, may put forth high promises; we will meet them.—Invite every body to get ready for the forthcoming volume by beginning with the last two months of this year, as above offered.

N.B. The Fine 44-page Illustrated *Premium List* will be mailed *free* to any one not having received or preserved a copy, by simply sending a postal card request for it, giving name and P. O. address.

Fattening Turkeys.—"J. B. J. P." South Durham, Que., asks, "What do you think is the best and quickest way of fattening turkeys? I mean to fatten up a couple of hundreds this fall for the English market."—Our own experience, on a small scale, indicates cooping closely in open slat coops, well roofed, set up from the ground so that the dung will drop through, and feeding especially corn meal, but changing for a single meal now and then to buckwheat, barley, wheat, etc. Use powdered charcoal occasionally, and follow the plan of soft feed by day and a good feed of hard grain at night.

Convention of Agricultural Chemists.—A meeting of Agricultural Chemists was called at Washington, D. C., July 28th, by Hon. J. T. Henderson, Commissioner of Agriculture of Georgia. Upwards of twenty of the leading Agricultural Chemists were present; their attention was principally devoted to the consideration of the best methods of analyzing Commercial Manures. An adjourned meeting of the Convention was held at Boston, Aug. 27th, in connection with the Association for the Advancement of Science, at which, methods for the determination of Potash, Ammonia, and Phosphoric Acid were provisionally adopted for a year. This movement of the Agricultural Chemists will probably result in the establishment of a sub-section of Agricultural Chemistry in the Association for the Advancement of Science, and a thoroughly organized body of earnest co-workers in the important field of Agricultural Chemistry.

The Mississippi Valley Horticultural Society.—Judging from the number that took part in the first exhibition of this new Society, and the wide range of country represented, it would seem that it is a national rather than a sectional institution. Fruit growers and fruit were there from the many States, from New York to California, and the Show was all that the most hopeful could have anticipated. It is a pleasure to record the opening of a new Horticultural Society, with so much promise as this one has of future success.

The N. Y. Horticultural Society.—The autumn show of this Society was held on Sept. 22-24th at Metropolitan Concert Hall, and was perhaps the most successful ever held by this Society. Mr. Wm. Bennet won the grand prize for the best 50 stove and greenhouse plants. As usual the Parsons and Sons Co., of the Kissena Nurseries, Flushing, L. I., took the first prize in Evergreens. John Jones, of Madison, N. J., made a fine display of cut Roses. The show of Ferns was very fine, and the chief prizes were taken by Mr. Henshaw, gardener to Mrs. John C. Green, and Mr. F. Roenbeck, Bayonne, N. J. The prize for Gladioli was awarded to Dr. F. M. Hexamer, New Castle. Mrs. M. J. Morgan made a fine show of Orchids. Messrs. Hallock and Thorpe, of Queens, L. I., exhibited a large collection of Double and Single Pelargoniums, never before exhibited in New York. The best Cut-flower prize was taken by Peter Henderson, of 35 Cortlandt St., N. Y. W. C. Wilson & Co., of N. Y., had a large and characteristically good display of Plants, Flowers, and Floral Designs. Woolson & Co., Passaic, N. J., exhibited a large and choice collection of Hardy Herbaceous Perennials. Among special exhibits the display of Aquatics from Mr. E. D. Sturtevant, Bordentown, N. J., was the most interesting, consisting chiefly of *Nymphæa Devoniia, N. rubra, N. cærulea, N. dentata*, and the Egyptian Lilies. Among the principal prize takers in fruits were J. H. Rickett, Newburgh, N. Y., T. S. Force, also of Newburgh, and C. J. Copley, Staten Island. In the Vegetable Department, Messrs. B. K. Bliss & Sons, 34 Barclay St., N. Y., Wm. Ball, Spuyten Duyvil, and F. G. Hexamer, New Castle, were among the successful competitors. The fruit and vegetables were not as abundant as one would have expected.

Building an Ice-House.—This is the season for constructing a house for storing ice. The absence of a plan with full directions, cost, etc., makes this an exception to Nov. numbers of former years. We have nothing new to offer. Those who desire to build, and are not already informed on this important matter, may be glad to know that back numbers containing plans for ice houses, will be sent for 15 cents each. The last plan published—a cheap house to hold about 30 tons—was given in September last. Some of the other numbers, containing fully illustrated articles are: Oct. 1870, Nov. 1871, Oct. 1874, Dec. 1875, Dec. 1877, Nov. 1878, Dec. 1879. The chief rules in constructing the ice boxes are: to have a good non conducting cover to the ice, perfect drainage with air-tight foundations, and ventilated at top. Store the ice in dry, cold weather, and have it packed closely, and the mass as solid as possible.

Pansies Destroyed by a Grub.—"R. T. H.," Summerside, P. E. I., writes that a small, dark, slate-colored grub, with fine, black stripes on back, and light-colored beneath, about half an inch long, has eaten the leaves of his pansies, and caused the stalks to dry up. Hand-picking and other remedies availed nothing. We suggest "London Purple" as a safe remedy. It should be dissolved in water and applied as for "potato bugs."

Dead Trees.—"M. Z.," Nazareth, O., writes: "For several years we have been in the habit of sprinkling the grass in our apple orchard with liquid manure, taken from a sink near the manure pile. A few of the trees, now about forty years old, have died. I am told watering with manure is the cause. Is this so?"—No—if it has done the grass good it has certainly not hurt the trees. The difficulty is probably that you have borers in the orchard, and other trees will be attacked. The apple borer may be found beneath the bark at the surface of the ground, and killed by pricking with an awl, or cutting out with the knife, but most successfully fought by making a little mound of ashes or lime around the collars of the trees in the spring, which prevents the beetles laying their eggs there.

A Western Swindle—perhaps not confined to the West—by an adroit use of a scientific instrument, is detailed in our "Humbug Column." It can not fail to interest every reader, either old or young.

Blight of Fruit Trees.—Prof. T. J. Burrill, of the Illinois Industrial University, read a paper on "Anthrax of Forest Trees" before the Association for the Advancement of Science, in which he gave the results of some experiments which he had made with pear blight and fire blight of apple trees. He considers them identical in origin, and the result a living organism—a small fungus of the genus *Bacillus*, growing in the living bark. So minute is this fungus that a very high magnifying power of the microscope is necessary to see it. The method of experiment was to cut off small portions of bark of diseased trees, and insert them beneath the bark of healthy ones, as in the process of budding. Sixty-three per cent of all the pear trees inoculated became diseased. Of pear trees receiving virus from blighting apple trees, 73 per cent became affected. When the process was reversed, a much smaller per cent of trees were inoculated. The most conspicuous change Prof. Burrill finds in the tissue of the affected parts is the almost total disappearance of starch from the cells. This would lead one to think that the disease is a fermentation caused by a minute fungus, closely related to those which induce fermentation under ordinary circumstances.

Colt with Chronic Cough.—"C. L. T.," Poolesville, Md. You should have consulted a good Veterinary Surgeon long ago. There is something seriously wrong when a four-year old colt coughs for two or three years. He probably has some asthmatic difficulty which he will very likely not outgrow.

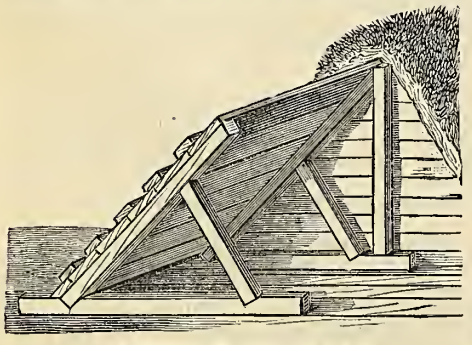
Cleaning Oil Barrels.—"J.S.," Harrison Co., O., writes: "Among the numerous plans for cleaning oil barrels, none seem to me to be as effectual as the way I cleaned one two years ago. That was by pouring into the barrel, at the bung, a pailful of strong lye, boiling hot, then rinsing thoroughly, so that the lye reached every part of the inside of the barrel. The barrel was then soaked a couple of days by being filled with clear water, when it was ready for use. I never detected the slightest odor of the oil in the cider or vinegar that has been drawn from this renovated oil barrel."

Our Editors Abroad.

It is increasingly the custom of the Editors of the *American Agriculturist* to go here, there, and everywhere, and *see* what is being done, and what is wanted. Just now two of the oldest Editors—those who have given to this Journal their whole heart and soul work for 28 and 18 years respectively, contribute Notes of Observation to this number from widely separated points. One tells us what he has seen in the West and Far Northwest—in a region hitherto little visited; the other in "Notes from the Pines," gives a condensed variety of observations, horticultural and otherwise, from over the sea. The latter is accompanied by another important member of the staff, whose practical work and abundant knowledge will doubtless yet do much towards supplying most useful information to our readers.—With so important a part of the editorial working corps absent, we hope our readers will find in this number evidence that there is a "reserve force" sufficiently strong to get out a fairly good paper, to say the least. It speaks for itself! But all hands will be back at their posts in time to take hold of the first number of Volume **40** with renewed vigor of body and mind, and with new stores of fresh thought; and we are sure the "*two-score*" Volume will surpass all previous ones in many ways—in beauty, in practical, useful, interesting material for all of its hundreds of thousands of readers.

Specimen of Muck or Peat.—"J. J. T.," Pass Christian, Miss. The sample called "muck" is excellent peat—good either for manure or fuel. To prepare it here for manure it would be best to dig it late in autumn or winter, and expose it while wet to freezing, but it is hardly likely that with you it would have frost enough to break up its tenacity. However, when partially dry, peat usually crumbles when roughly handled, and so you may be able to get it fine and dry with ease. When in this condition use it as an ingredient in compost heaps, and as an absorbent of liquids in the stalls, stables, and barn-yard. Composts may be two-thirds to four-fifths muck and the rest manure. Acted on by lime or ashes, with salt, such muck will prove excellent for many crops, and add much to the products of the farm.

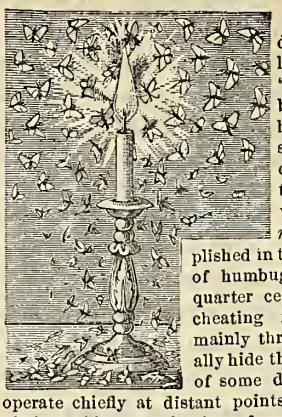
Dam for Ice Pond.—"P. S. D.," Dean's Corners, N. Y. If you do not strike a gravel bed, the problem you have to solve is an easy one. If you can dam the stream and cause the water to back over a meadow, that is your best plan, for whatever of dirt the stream brings down will not get into the pond very much, but if the bed of the stream must be in the pond, it is still most likely that you will not have much trouble from dirt. The pond need not be over three or four feet deep; but it will probably be best to level it by plowing over the hummocks, and taking them off with a road scoop to fill low spots. The water may stand on all winter and not kill the grass roots, so if the whole is level and seeded to grass, and can be thoroughly drained as soon as the ice crop is harvested, you may depend upon one or two crops of hay besides. The best dam you can have will be a clay dyke. Through the center of this dyke, a row of planks should be set perpendicularly breaking joints, thus ▬ ▬ ▬ ▬ and clay should be rammed hard on *each* side of them. This prevents leaks, and the burrowing of muskrats. You must provide an overflow—best at the bed of the stream, and a sluice to draw off the water. The top of the overflow must usually be a foot lower than the top of the the dam. Make it as narrow as you think it will do, say four to six feet. You will need two, and perhaps four frames (see figure), upon which to spike two-inch planks crossways—making the joints as tight as possible, battening them with fence strips if necessary. Planks are nailed across the sides of these frames against the dyke on each side, and clay is well rammed against and around them. The lower part of this plank part of the



AN OVERFLOW DAM OF POND.

dam must also be well clayed, and if the clay is very stiff it will be necessary to dash a little water on it to soften it during the operation of ramming.

Sundry Humbugs.



In sending on the adroit swindle noted below, Mr. Judd writes: "Follow up the humbugs with an unsparing hand. I hear on every side, in the Far West especially, constant testimonials to the great work the *American Agriculturist* has accomplished in the persistent exposure of humbugs during all the past quarter century. Those of the cheating fraternity who work mainly through the mails, generally hide themselves in the depths of some densely populated city; operate chiefly at distant points—so far off that their victims will not be likely to ferret them out and obtain legal redress. But the Western country abounds in travelling "agents" for this, that, and the other hocus implement, patent, device, recipe, etc., etc. The press, so long silent, is latterly coming to the aid of our Journal, by copying our articles, and partly by original investigations and exposures. This is well. If they will keep it up, and unitedly shut out advertisements of Lotteries and other swindling schemes, it will be worth millions to the country. I have been told scores of times this summer by our western subscribers, that the *American Agriculturist* would have paid its readers many times its cost, if, leaving out all the rest, it had only printed its Humbug Columns and its advertising pages—the latter as one of the few sources of information, where one may find what he needs, with the confidence that he will not be cheated by the advertisers."

JOURNALS ADVERTISING LOTTERIES INDICTED.

If the newspapers would not advertise the "drawings," and the false stories about "great prizes" secured by little outlay, often told as news items, the lottery business would soon come to an end, especially now that the Post Office Department is as far as possible closing the mails against the managers of these swindling

Fig. 1.

Fig. 2.

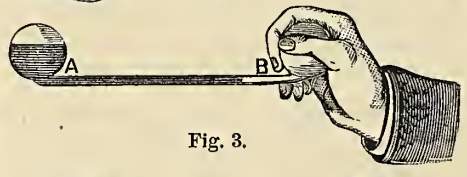


Fig. 3.

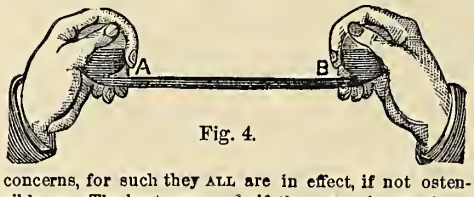


Fig. 4.

concerns, for such they ALL are in effect, if not ostensibly so. The best managed, if there can be any best, do not give the ticket buyers anything like an equitable chance; while as a whole the so-called State and other lotteries are merely organized cheating establishments. During the past month a considerable number of prominent journals of New York City have been indicted by the Grand Jury, and their right to trample upon, or defy the legal enactments of the State is likely to be tested. That they feel and fear, is shown by the present absence from their pages of the array of long columns of "prizes," "Capital," "Grand," and otherwise, said to *have* been secured, or that are to be secured.

An Adroit Scientific Swindler.

While travelling at the West, we learn from a friend of one of the victims, the particulars of a novel, or, at least an adroit swindle practised in Illinois and Iowa, and probably elsewhere. There is a little philosophical apparatus, long in use, called a "Pulse Glass," to illustrate the effects of slight differences in temperature. It consists of two glass *bulbs*, (*A*, *B*, fig. 1) of very thin glass, of any size from half an inch to three inches in diameter. These are joined together by a *tube* of thicker glass, anywhere from 3 inches to 15 inches in length. In making them the air is expelled by ether vapor, and the bulbs are partially filled with liquid ether, colored scarlet or red. If the hand is applied to *A*, its heat expands the ether vapor above and rapidly pushes the liquid ether into the bulb *B*, as in figure 2. Shifting the hand from *A* to *B* will quickly drive the liquid back to *A* again,

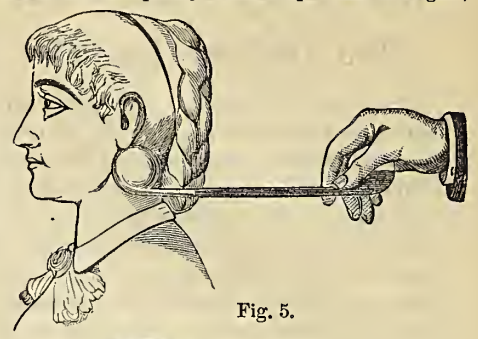


Fig. 5.

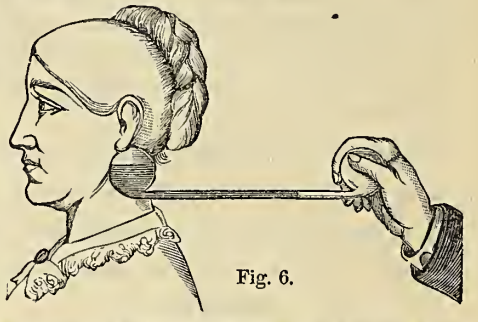


Fig. 6.

as in figure 3, and the operation may be repeated as long as one wishes. If *A* be taken in one hand, and *B* in the other, as in figure 4, and both hands are equally warm, there will be no motion of the liquid. If two persons each take one of the bulbs in the hand, the warmer hand will drive the liquid into the other bulb. If, as in fig. 5, a person takes hold of one *tube*, with the thumb and finger, the inside of the hand not touching the bulb, though held over it as a blind, and places the other bulb against the face, or any part of the warm flesh, the liquid will be driven into the bulb under the hand. But by grasping the other bulb closely in the hand, the liquid will be driven back, as in figure 6. In brief, any slightest degree of *higher* heat upon one bulb, will drive the liquid into the other. Simply blowing warm breath or cold air upon either bulb will cause a movement of the liquid.

HOW USED BY THE SWINDLER.

A man, of good address, driving a fine team, calls upon a well-to-do farmer, nominally to inquire the way. He speaks of the beauty of the country, etc., and continues the conversation on various topics, managing to intimate that he is Prof. B——, in the College of Physicians and Surgeons, in New York, or in some other well-known Medical University. He also himself assumes the name of some distinguished Professor in the College, and says he is out on a vacation or visit, driving for his health, and on his way to some town at a considerable distance. The result is that he gets an invitation to stop for the night, which, after sundry protestations he accepts. His horses are well cared for, he is assigned to the "spare room," and generously entertained as

"AN ANGEL UNAWARES."

He makes himself very agreeable during the evening, has much information to give, and all are delighted at having so distinguished a guest. Of course, he will not be allowed to pay for his keeping—the offer of remuneration is almost an insult. So, on departing, he is profuse in his admiration and thanks for Western hospitality, and in return feels obliged to do a little favor. So he calls his host aside, and intimates to him, in the most delicate way, that his great skill has enabled him to discern that the wife, or a favorite daughter, is threatened with approaching epileptic "fits," or even "insanity," or other brain disease, and advises him to call early upon his

"FAMILY PHYSICIAN."

The host is alarmed, and earnestly asks if it can be so. Here comes in the "pulse-glass" which the "Professor" brings out from his pocket-case of instruments. He applies the liquid bulb to the region of the jugular vein (fig. 5), and the liquid darts over to the other bulb, simply from the heat of the neck. He applies it to another person's neck, and no such effect takes place, because he then carefully *keeps his warm hand upon the other tube*, as in fig. 6. Repeated trials on different persons invariably produce the same result; the "diseased" wife or daughter only sets the red liquid in rapid motion because in her case only is the opposite bulb left unwarmed. Of course the unscientific host, not observing the sleight of hand, is fully convinced, and becomes greatly anxious. He is still referred to the "Family Physician," as the accomplished guest "determined, on leaving home, to

give no attention to his medical practice, for his own health's sake, and had only incidently referred to the case before them in a thoughtless moment, overcome by the kindness of his host.' His host is thoroughly aroused, "fears the family physician may not understand the case," and beseechingly implores his wondercusly skilled guest to "do something for them." After many objections on his part and much earnest entreaty, he finally lets it out that he is going to visit a dear friend who has a member of his family similarly affected, and that before leaving the College he had prepared a single bottle of medicine that was considered the only sure remedy He is implored to let his host have it, but he protests that it was difficult to make up, that his friend was waiting for it and he had perhaps done wrong in delaying for the night; that he could only get another bottle by telegraphing and calling an expert from a distance to make it up; that he was to have $50 for it, and that it would cost almost that to get it made by telegraph and forwarded with extra dispatch by rapid express, or by special messenger perhaps.

RESULT.

The host gladly pays the $50, or perhaps $100; the Professor drives off rapidly to reach the nearest telegraph office—(rather to find another victim a few miles off) the inert medicine is used and speedy cure obtained, because there was no disease; the family are wonderfully grateful and Providence is often thanked for directing the angel unawares to their door. Of course no one reveals to others the fact that a member of the family has been so near the verge of epileptic "fits" or "insanity"; and the swindler goes on unexposed and unmolested, finding other victims If successful once a day, it yields him $25 to $100, which is nearly clear profit as his "hotel bills" are next to nothing. This is a veritable case We here give it in full, to help put our readers on their guard, not only against this particular imposter, but against a variety of other "angel's visits unawares."

NURSERY AND TREE AGENTS.

"S T. R.,' of Cal. (and many others). Mr. R asks, 1st, 'if Ellwanger & Barry, of Rochester, N. Y., are reliable?"—They are entirely so, or their advertisement would not be found in the *American Agriculturist;* and 2nd, Mr. R. asks: "If I buy of ——— who claims to be E. & B's. agent, will I get what I pay for."—Or that we know nothing. There are agents, and agents, everywhere almost—some good, and reliable; many others are the veriest swindlers of the meanest kind To sell a man a tree over which he is to devote years of time and care before he can know that he is imposed upon is worse than stealing his money directly from his pocket. The best way to do is to send always direct to the nurseries themselves. If disposed to listen to the agent, get his terms, etc., but *never give the order to him in any case;* send the list directly to the proprietor, *if* well known as a reputable party, and ask him all about it the terms and quality, etc., and if satisfied send the order directly to him. The "agent," if an authorized one, will settle his commission on sales with his employers.

'PROF. CALDWELL'S MAGNETO-GALVANIC BATTERY," which he asks Postmasters to become agents for, was shown up and pictured in our last May number, page 177. Then it was "Prof. Boyd's," but had no "heart" in the middle. It is just now most extensively pushed all over the country. The claims for it are non-scientific, and the shecrest nonsense. We would not give five cents a bushel for them, except as old metal.

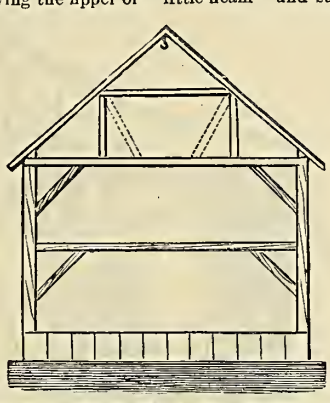
MISCELLANEOUS.

Don't buy, or touch, or become agent for any of the mixtures and preparations offered as cheaper than kerosene, for producing light, no matter how tempting the offers of profits, or of patent lever watches to agents. *All* these mixtures are positively dangerous, however "safe" the burners are claimed to be. More such offers go out from Michigan than elsewhere.....Subscribing for before unheard of *new* papers and magazines is risky, if issued by parties one has never heard of. Of course there are worthy new enterprises, but there are every year numerous such sheets started with tremendous inducements to subscribers and agents, which are frauds, or are issued by enthusiasts, or by parties with no capital; and after one, two, or three numbers go out, cease to live, and those subscribing lose the money paid in. Often there is lack of honesty or lack of money to pay postage on answers of explanation to inquiring and complaining subscribers. Complaints of such treatment are among the commonest contents of our humbug drawer..... "W. J. K.," of Mo., and many others sending medical circulars and inquiries, are respectfully referred to the full showing up of all sorts of Patent Medicines, on page 300 of the *American Agriculturist*, for August 1880.... "The U. S. Washing Machine' was pictured and its sellers exposed on page 133 of April *American Agriculturist*, to which our Lady Subscriber in California and many other inquirers among new comers, are referred.... ....To inquiring new readers: Rev Joseph T. Inman, Bible House, N. Y., an extensive advertiser, is a humbug of the first water, often exhibited in these columns.

Liquid Manure.—"A Subscriber," Millheim, Pa., writes: "Please let me know whether it would profit a farmer to apply Liquid Manure to land, and the quantity to the acre."—Liquid Manure is the "double-distilled extract of fertility"—distilled, so to speak, in the animal economy. There is not a plant on the farm which will not be grateful for it, but it must not be too strong. Whether you can apply it with profit, is another question. Probably you could with proper appliances, especially a good sprinkling cart. The quantity to be applied to the acre is hard to measure Experience will indicate the strength desirable, and it will be found most beneficial upon grass and grain crops, frequently applied while they can be gone upon without detriment.

Peach Yellows.—"J. S.," Harrison Co., Ohio, writes: "My peach orchard has all become affected with the disease termed "Yellows," and most of the trees died from it. Would it be safe for me to replant the same orchard immediately, after grubbing out and burning the old trees? Or in other words will the young trees take the disease by their roots coming in contact with those of the old trees?"—It is proved beyond a doubt that the "Yellows" is contagious, and whatever the exact nature of it may be, it is not safe to plant a new orchard upon the same ground where the "Yellows" has prevailed to a destructive extent—not immediately at least.

Removing a Beam for Horse Fork.—The old barns, which had more and much larger beams than were necessary, had to be changed somewhat inside for the working of the horse hay forks. The method of removing the upper or "little beam" and supplying



REMOVING UPPER BEAM FOR HORSE FORK.

its place with braces is shown by dotted lines in the accompanying engraving. With this beam removed the hay fork, with its load, has free working room, and at the same time the roof is as thoroughly braced as before

New Jersey Exhibition at Waverly.—The especially noteworthy portion of the show this year was the exhibition of fruit. It was almost altogether that of amateur fruit-growers, and the specimens were superb. There was only one exhibit by a professional nurseryman. Mr Quinn, the officer of the Society in charge of the Horticultural Exhibition, said it was the best show of the kind he ever saw, and we are quite ready to believe him. In other respects the show was about as usual. A new feature has recently been added. The Sanitary Department, in which apparatus for house-plumbing, drainage, city sewerage, disinfectants, etc., were exhibited. In connection with this, but not of it, the State Experiment Station displayed a large number of samples of commercial fertilizers sold in the State during the year. These had been carefully analyzed, and the analysis was given, together with the estimated value, as shown by the analysis, and this compared with the price at which it was sold. This "estimated value" is really no guess work, but the real value of the ingredients at prevalent market prices. It would be better, perhaps, to call it "Deduced value," as showing that the value is taken directly from the analysis in each case. In this connection we may allude to the article of *baled horse manure*, put up by a company in Newark for shipping into the country. This indicates real progress in handling the article. The bales are compact and inodorous.

"Worm" on "Pussley."—"C. T. S." sends a "worm' which he found feeding upon the common garden pest, the purslain or "pussley." The "worm" did not arrive in the best condition; it is the *larva* of some insect which we do not recognize. We rejoice with Mr. C. that there is an insect enemy to the "pussley," and only hope his tribe may increase, if it will only eat out this rapid growing pest of the garden. It may be encouraging to many gardeners to know that there is a white mould making a vigorous growth of late years upon this same plant, that may help to keep it in check.

(*Basket Items continued on page* 485.)

Editorial Items from the West.

New Texas Cattle Routes.

At Prairie du Chien, on the Upper Mississippi, we noticed extensive cattle yards in course of construction, and, on inquiry, learned that they are intended as resting and feeding yards for cattle brought by railway 400 miles, from Running Water where they cross the Missouri River near the mouth of the Niobrara. Open a map and follow the cattle as they start from Texas over the long route, up to Nebraska and Southern Dakota, feeding and growing as they go, 10 to 15 miles a day. Pastured in Nebraska and Southern Dakota, and sometimes finished off on corn in Nebraska, they are gathered at Niobrara, and started on a railway journey of 674 miles to Chicago—but profit and safety, as well as a humane legal provision, require them to be unloaded for rest and feeding at this point. If destined for Eastern markets, a thousand miles more of railway carries them from Chicago to New York. The map will show four other railway routes running across Iowa from east to west, and two across Minnesota, all extending to Chicago, and all will take part in gathering and transporting these vast herds of cattle, both those originally from Texas, and those fed or raised in Western Nebraska, Dakota, and Wyoming. It will be seen also that half a dozen other railways cross the State of Missouri, extending westward and southwest to the vast plains south of Nebraska, etc.

Cattle from Montana for the East.

Away up the Missouri River, 200 miles above the mouth of the Yellowstone River, we saw a single herd of over 1,000 cattle being slowly driven down the north bank from Western Montana to Bismarck, where (nearly 2,000 miles from New York), they will be shipped over the Northern Pacific R. R., and on eastward via. St. Paul and Chicago. We also saw other large lots coming down by boats, a thousand miles or more from Fort Benton and westward, to Bismarck. All accounts agree that there is to be an immense business done in stock raising—cattle, horses, etc.,—in Western Montana, now that new outlets to Eastern markets are opening. The extent and possibilities of our country can be but faintly appreciated until one has gone over at least a portion of the "Great West"—including that part west of the middle Missouri River.

Flax on Prairies—Mills Wanted.

As we have before noted, many farmers at the west find it profitable to put in flax as a first crop on newly broken prairie. [See September *American Agriculturist*, page 340.] It requires little work, and yields 8 to 12, or more bushels. We found in Central Iowa a number of farmers who raise a good deal of flax on older land, the yield being 12 to 20 bushels of seed per acre. Oil mills will make a home market for the seed, and the more oil-cake there can be sent cast, the better it will be for the older farms. Query: Will it not pay enterprising men to start more establishments for using the straw or fibre which is now mainly wasted? It strikes us that here is a good field for occupancy—perhaps for new inventions in the way of working and using the machine-thrashed straw or fibre. There are now, here and there, manufactories which buy this straw at $2 to $4 a ton—that which has been run through the ordinary thrashing machine.

Quick-Growing Trees.

We have seen many vigorous groves, windbrakes, and fences, in several parts of Iowa, of the quick-growing Soft Maple, Willow, Lombardy Poplar, and Cottonwood. The Maple is raised from seed; the other three from cuttings. Slips six to eight inches long are stuck into the new-broken ground, and grow so rapidly that in the course of four years they give an abundant supply of wood, and, when placed in line, a good fence is left after cutting the upper part off for fuel. We found farmers almost equally divided in their preference for Maple, Poplar, Cottonwood, or Willows. In Benton County, Iowa, there are flourishing Osage Orange Hedges, but north of this the plant is considered uncertain as a general rule—not always.

Some Improved Windmills, or Wind-Engines.

In the March number of the *American Agriculturist*, pages 98-99, we discussed the value of the force of the wind as utilized by the Windmill or Wind-

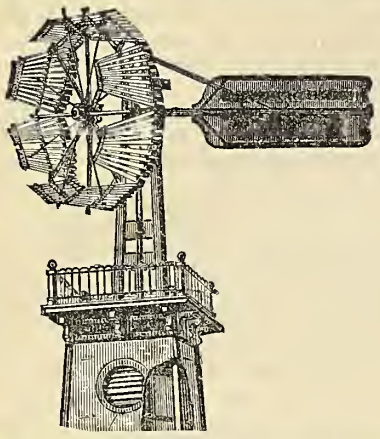


Fig. 1.—THE "HALLADAY" MILL AT REST.

engine. At the same time a number of standard mills were presented, and their differences to some extent pointed out. These did not include all the first-class mills; in fact, we did not even mention the "Halladay" Mill, made by the U. S. Wind Engine and Pump Co., Batavia, Ill., one of the pioneers, as many of our readers know, in the field of improved Windmills in this country. In the present article, without setting forth the importance of windmills in general—as that was given at some length last March—we simply wish to add to the list then commenced, some of the mills that have since come before our notice. The main feature in the "Halladay" Windmill is the arrangement of the regulating gear by a sliding head, so that when the velocity increases the sails present less surface to the wind. The speed of the wind-wheel is dependent on the velocity of the wind, and the angle at which it strikes the sails. In the "Halladay" the exposed surface is diminished without changing the angle, thus keeping the pressure of the wind equally distributed on all sides of the wind-wheel, avoiding strain, and at the same time time being self-regulating.

Figure 1 shows this mill in position when at rest. When the sails are fully spread they take a radial position somewhat as in the wind-wheel shown in figure 2—that of the Eureka Mill, manufactured by the Kewanee Mfg. Co., New York City. This is a "solid wheel" mill, and, like all of its class, has certain points in its favor. It is claimed that ice and sleet do not interfere with their work as much as with the movable mills, which sometimes must be cleaned before they will start. It is a self-regulating mill, and simple in its construction.

The "Champion" Wind-engine is shown in figure 3. The same company, Powell & Douglas, Waukegan, Ill., make an Iron Screw Windmill; it has

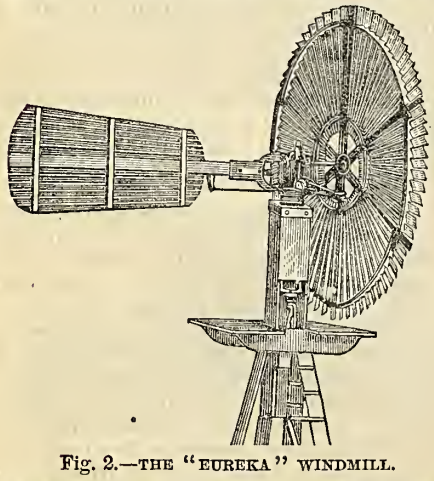


Fig. 2.—THE "EUREKA" WINDMILL.

a twisted sail, and works on the same principle as a propeller wheel, in fact, is the "Champion," with corrugated iron instead of wooden slat fans. These mills are self-regulating, and can be set by the *governing weight* to run at any desired speed. An all iron mill is shown in figure 4—the "Iron Duke," made by O. S. Gilbert & Co., Indianapolis, Ind. This is a self-regulating mill, and, for the power it gives, is light, strong, and durable. Each of the mills mentioned has special points of its own, which are set forth at length in the circulars and pamphlets of the several companies, and with the light which these will give upon the subject, those desiring mills are enabled to decide which meets their wants the most fully. The U. S. Windmill Co., for example, makes 17 sizes, ranging all the way from that of one-man power, up to those of 45 horse-power, employed by railroads, etc.

Tim Bunker on Going to the Cities.

MR. EDITOR.—Your call for more "copy" comes right in the pinch of fall harvest, when apples are to be picked, corn to be cut up, pumpkin and squashes gathered, rye to be got in, mangels to be housed, and a dozen other things to be done before Saturday night. This crowding a man, when he is already in a tight spot, is not always convenient. Just now the topic of discussion in Hookertown is the emigration of our farmers to the cities and villages. It has been up in the Farmer's Club, the women have talked it over in the Sewing Society,

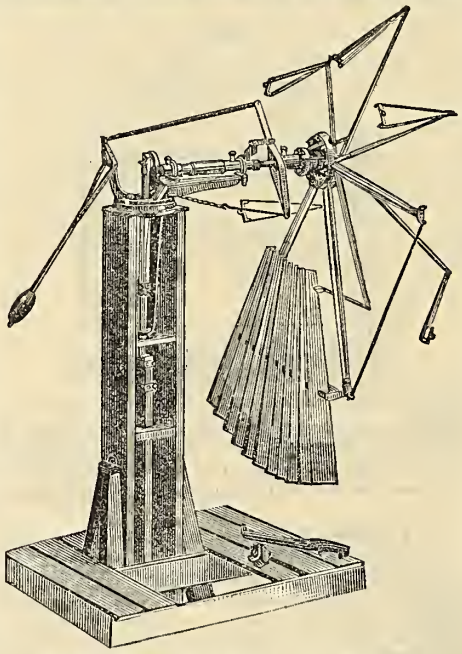


Fig. 3.—THE "CHAMPION" WIND ENGINE.

and Mr. Spooner has preached a sermon for the times in which, Seth Twiggs says, he gave "the oneasy critters that are itching for city life, fits." It is the town talk, any way, and every body here wants to know what you are going to do about it.

You see, when the "Shadtown Herald" came out with the census statistics of this Commonwealth, it came upon us like a thunderbolt, that the farms had lost over 12,000 people, and the cities and villages had gained 88,000 in the last ten years. There were the figures in black and white, put down over against every town in the State, and there was no getting away from the ugly facts. A meeting of the Farmer's Club was called right off, and the assembled wisdom of Hookertown freed its mind. Deacon Smith said he felt a good deal discouraged at the result, he said he had been hoping that the agricultural fairs, which are held now in every county in the State, the Farmers' Clubs, which are numerous, and the greatly increased circulation of agricultural papers would stop this depopulation of the rural districts, and turn the tide in their favor; but it has not been done. The show was worse for the farms than in any previous census, and he hardly knew what to make of it.

Jake Frink said, "the Deacon need not trouble himself to make anything out. It was already made, and we might as well look the thing in the face. I've thought on't considerable, and guess I see thro' it. Laziness is at the bottom on't you may depend. My Kier has gone off to the city, and all his folks. Ye see he got tired o' raisin corn and potatoes on the old farm and married the widder, and was off to the Whitecoaks, 'cause he thought it was easier to swap horses, and burn eharcoal, than to stay at home, and airn his bread by the sweat of his brow. It warn't long before he got tuckered out with carting coal, and moved into Shadtown, and opened an oyster saloon. The business hain't never paid and never will. Fact is, laziness don't pay anywhere that I know of. We may change the place, but we don't git rid of the pain by gwine off into the city."

Seth Twiggs emptied the ashes from his second pipe, and said, he was glad to hear so much good sense from his neighbor Frink. "But I rather think, judging from the looks of some farms in this neighborhood, there is considerable laziness that has not emigrated. He guessed the young men had been lectured too much on the use of tobacco and on the sin of raisin it. It was one of the few payin crops, and when the ministers and the deacons, and the moral reformers came out agin it, as a crying evil, he did not wonder that some of them shut up their tobacco barns, and started for the city, where they don't trouble themselves about a man's morals, if he only paid his taxes and pew rent. For his part he had always smoked ever since he was a boy, and tho' it was a nasty and expensive habit, he thought some other things were worse. I've suffered a good deal of persecution for it, and some times thought I should emigrate if folks did n't let me alone. My wife hetchels me by night; the boys hail me in the street as a walking coalpit. Tim Bunker always puts a pipe in my mouth when he writes, and Mr. Spooner preaches about 'fleshy lusts warring against the soul,' by which he means me, and he might jest as well call out my name in meetin. I guess I shall have to go to the city myself, where they can smoke in the streets, and in the cars, and nobody make a fuss about it. Fact is, Hookertown is gettin too narrer."

"Jess so," said Geo. Washington Tucker, "It's narrerer than the edge of a knife. A feller can't drink a glass of lager or a little whiskey, but what a smellin committee is around after him, made up of deacons and Dorcas Society women, who want to know where he got his likker, and use him as a witness against the poor man who is trying to get an honest living, by selling a little harmless beer. Talk about Hookertown 's being narrer, is n't the State narrer? Did n't the legislater last session pass a law defining lager and other malt liquors as intoxicating drinks! Ye see folks won't stand sumptuary laws, and they are getting out of it. I'd go myself to-day, if I had anything to go with."

Mr. Spooner, who talks about as well on agriculture, as he does on religion, took a more cheerful view of the situation. He said "the fact of a decrease of the population in the farming districts was not to be disputed. It was not peculiar to Connecticut, but was true of all the older States, as far west as Ohio. The population of the farms

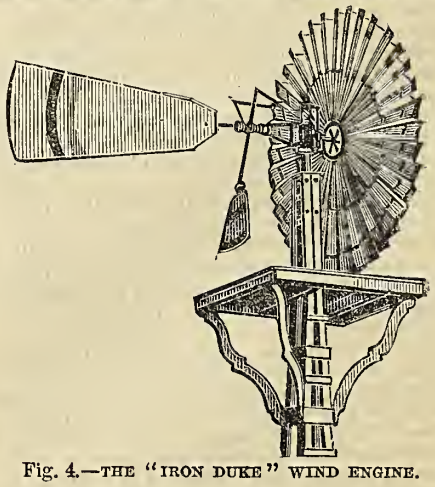


Fig. 4.—THE "IRON DUKE" WIND ENGINE.

were not all drawn to the cities, but to the virgin soils of the West and to the sea. Morals and legislation upon questions of morals he thought had little, or nothing, to do with it. Our agricul-

ture was in a transition state, from the old style farming of fifty years ago, to the new ideas of the present generation. A great deal of new light has broken in upon the art of cultivating the soil, and farmers are studying, and learning, the science of their business. Some are apt scholars, and know what tools, manures, and stock are needed to make the particular farm they cultivate, pay. These men have no thought of going to the city, or going West. Their skill and labor are as well rewarded here as they would be at any place. They are fairly prosperous and enjoy life. Others are slow in learning, cling to the old methods, raise crops in competition with the new lands of the West, and get discouraged, and go into other business. Better times will come a while hence, when we get over the transition state, and understand better what crops will pay, and learn how to live well upon the limited income upon the farm."

These remarks of my neighbors show the drift of public opinion upon the great change that has come over our farming towns. The tide of population is away from the farm, in every agricultural parish in the State. Seventy-five of our rural towns, show a loss of twelve thousand in ten years. This is by no means an unmixed evil. It does not prove a decline in wealth, or in morals. If a farmer who understands his business, buys up the land of his thriftless neighbor who is doing a losing business, the Commonwealth gains rather than loses. The acres, that did not pay under poor husbandry, will be made profitable under good, and add to the food supply of the State. An increasing, thrifty city and village population means a larger number of consumers, and better prices for the milk, butter, veal, lambs, pigs, poultry, eggs, and vegetables, and fruits, raised upon the neighboring farms. The man who loses money in farming, for want of skill, may sell his labor at a profit in the city or village, and be a gainer by the change. With this fact of a declining population in the agricultural towns we have another, that farms in this State have appreciated in value, averaging seven per cent. Let us give thanks and take courage.

Hookertown, Ct., Oct. 10, 1880. } Yours to command, TIMOTHY BUNKER, Esq.

Notes from the Pines.

When I wrote my last "Notes from the Pines," little did I suppose that the next "Notes" would be from among the "Pines" on the other side of the Atlantic. Here the most frequent Pines are usually called the Scotch Fir, though it is not a Fir at all. I do not propose to give, in these "Notes," an account of travel, which would be quite out of place, but merely note some horticultural matters that strike an American as different from those he is accustomed to in his own country. A brief sketch of

The Route Travelled

will indicate the localities referred to. After landing at Queenstown and reaching Cork, we went to the famed Lakes of Killarney, by way of Bantry and Glengariff. Our route took us through one of the wildest parts of Ireland. Through North Wales to Chester, to Liverpool, and thence to the venerable University town of Oxford, where these Notes are dated. Glengariff is almost at the extreme south-eastern part of Ireland, on the Bay of Bantry and a popular watering place. Here we found

Fuchsias in Hedges.

In front of the hotel was a long hedge of what I took to be *Fuchsia coccinea*, one part of which was fully 8 feet high, the principal portion being kept at about 3 feet. This, with its myriads of pendulous, bright scarlet flowers, was a horticultural exhibition of itself. The Blue Passion-flower ran in among the Ivy which covered the front of the hotel, and displayed its flowers against the dark-green back-ground with fine effect. All through the mountains, from Glengariff to Killarney, the country was bright with

Furze and Heather,

both of which were in full bloom, the bright yellow of the Furze contrasting finely with the rose-purple tints of at least two species of Heath. The Furze or Whin (*Ulex Europæus*), is much used for fencing all through this portion of Ireland. A low ridge of earth is thrown up, or a wall of turf (sods) is built, and Furze planted upon the top. This plant is a mass of thorns, and soon forms a complete barrier. It has its disadvantages, however, for, like all live fences, if neglected for a few years it becomes a shapeless and unsightly mass. Besides this, it is apt to become a weed, and spreading, probably by seed, establishes itself in the fields and, if not eradicated while young, will soon take possession. I noticed several pastures rendered useless from this cause. What a country this is for

Broad-Leaved Evergreens!

Of course the Holly and Ivy are to be seen everywhere, the Ivy just coming into bloom, while the Bay Laurel, Cherry Laurel, and a host of others that must be kept under glass at home, are here among the common out-of-door shrubs.

In front of our window at Killarney was a specimen of *Aurucaria intricatus*, the "Monkey Puzzler," at least 20 feet high, and of the most perfect form, not a single one of its branches missing to mar the formal arrangement. The American is frequently and unfavorably struck by the

Paucity of Vegetables

in this country. Cabbages and Potatoes are served everywhere; besides these, Cauliflowers, String Beans, Scarlet Runners, and Vegetable Marrow, are all that I have thus far met with at the best or the poorest hotels. The Scarlet Runner, which we cultivate sometimes as an ornamental vine, is here common in gardens, but it is a sad substitute for our delicious Limas. Vegetable Marrow, rarely seen with us, is a long white squash; it has very little character of its own, but is an excellent medium for butter or white sauce. I have eaten overgrown cucumbers dressed in the same manner, and think them quite as good. This country seems to be the home of all forms and varieties of the Cabbage; Kales, Cauliflower, Brussels Sprouts, Collards, besides the heading forms, are abundant in many gardens, and in the moist climate reach a perfection not known with us. Indeed, common Cabbage is so tender and marrow-like, that though it was served as Cabbage, it was so different from the same thing at home that, supposing some mistake had been made, I inquired and learned that it was merely "common Cabbage."....One thing that struck me particularly, is the almost entire

Absence of Orchards.

In the long journey from Cork to Dublin and Liverpool, and thence to this place, within about 50 miles of London, I do not think more than a hundred or two apple trees were seen, and these in such small clumps that they could hardly be called orchards. Upon inquiry as to this absence of orchards, the reason assigned was, that the land was rented, and the tenants did not care to plant trees upon land which they might be obliged to give up at any time. This must be a very poor apple year, as in the above-named cities I saw in the fruit stores and on the street the most wretched fruit, gnarled, specked, and so poor that our farmers would reject them even for cider-making. In the abundance of our own crop it is probable that a much larger amount will be shipped than ever before. Plums seem to be the most abundant fruit, and often very good; have seen no very fine pears, but it is probably early as yet. Grapes, though mainly raised under glass, are much cheaper than "hot-house grapes" are with us. Women in several cases brought them to the car windows, offering bunches at a shilling each (24 cents), which would cost 50 to 75 cents at the Broadway fruit stores.. . One often sees a small or sometimes a large patch of

Osiers, or Basket Willows,

and baskets that are evidently home-made are very common. The great variety of baskets and hampers is very interesting; there are large and small hampers, round, oval, and square hampers, some are shallow and others deep; hampers with covers and without. Hampers for lunches, for game, and all sorts of produce, up to enormous things too heavy, when empty, for one man to lift. All these are not home-made, though a large share is produced by the farmers or gardeners. Whether this is an example that might be profitably followed by us, I much doubt. The time required by an expert workman must be so great, that with us a hamper would be a costly affair. Besides this, basket-making is a "puttering" work, and of a kind that our people do not take to kindly. A boy with two or three pieces, as may be, of board, and some laths or slats, will knock together in a few minutes a crate which will answer every purpose of a hamper that must require some hours to make.

The Oxford Botanical Garden

is not very large, but under the direction of Prof. M. A. Lawson, is in excellent keeping. It is interesting on account of its antiquity; and what, in this interesting town, is not old?—even the hotel where I write was built before Capt. C. Columbus took that memorable voyage! This is the oldest Botanical Garden in England, if not the oldest in existence. It was completed in 1633, it being founded by the Earl of Danby for "the improvement of the faculty of medicine." Its gateway, containing statues of the 1st and 2d Charles, was designed by the celebrated Inigo Jones, and was paid for from a fine which one Anthony Wood had to pay for indulging in a libel upon the Earl of Clarendon. It was pleasant to meet with many of our familiar American plants, conspicuous among which was our Poke or Pigeon-berry. Another home plant was our Cardinal Flower (*Lobelia cardinalis*), the flowers of which were much larger than at home, but not of such an intense scarlet.

Those who read of Oxford as a University town, have little idea of what the term expresses. It has

Over Thirty Colleges and Halls,

each of which, with its chapel, quadrangles, etc., is larger than any American College, Harvard and Yale, perhaps, excepted, and dating from the first century all the way down, there being but two or three that are not over 300 years old. One could devote weeks to the place, and then not see all of interest it contains. Having only parts of two days here, but a few out of the many Colleges could be glanced at; the matter of interest about these, that can be properly mentioned here, are but few. One of the noted points is "Addison's Walk," in the grounds of Magdalen College. This name, by the way, I did not at first understand, when given the local pronunciation, which is as if it were spelled *maudlin;* it is so called by those belonging to the College, as well as by the towns-people. The "Walk" is a well shaded avenue, with very irregularly planted trees, and with its abundant underbrush has a rather neglected appearance. The fact that it was the favorite resort of the author of the "Spectator" has given it a celebrity which would not otherwise attach to it. For me the most interesting thing about the walk was the view it allowed of a large herd of deer which were inclosed near by. While the walls of most of these old structures are abundantly clothed with Ivy, one is often reminded of home by coming upon the

Virginia and Trumpet Creepers,

the one putting on autumn tints which but poorly represent the beauty of the vine in its own country; the other is still showing a profusion of its scarlet blooms, which appear to be brightened in brilliancy as they are seen against the dark green of the Ivy. In the quadrangles there is generally a square of well-kept grass, looking as turf only can in this favorable climate; its brightness and freshness seeming to be out of place when surrounded on all sides by tall time-stained and crumbling buildings. If any attempts have been made at ornamental planting in these courts, we did not fall upon them.

Enriching Poor Lands.—There are three principal methods of rapidly increasing the supply of plant food in any soil: By feeding concentrated foods upon the land, as oil cake, cotton-seed cake, etc.; by the application of barn-yard manure, and the use of artificial fertilizers. Which of these three methods is to be adopted in any given case must be determined by the many conditions and circumstances that surround it. It may be that the feeding of sheep with decorticated cotton-seed cake upon a poor pasture may be the quickest and best method of enriching the land. In other cases the purchase and application of barn-yard manure may

be the most profitable. When it comes to the artificial fertilizers, it should be borne in mind that their true office is to supply quickly one or two ingredients that may be deficient in the soil—when these are known their use is to be recommended.

Editorial Correspondence.

Up the Missouri.

Having made many tours of agricultural study and observation during the last thirty years—often through and through such States as Ohio, Indiana, Illinois, Iowa, Michigan, Wisconsin, Minnesota, and frequently through nearly every other State—we thought we knew the whole country between Canada and the Gulf of Mexico, the Atlantic Ocean and the Rocky Mountains. But not quite so. We had not been up the Missouri River, over 2,500 miles above its entrance into the Mississippi at St. Louis. In our notes for the August *American Agriculturist* it was intimated that an American was not sufficiently educated to go to Europe until he had journeyed a thousand miles west from Chicago, and two or three hundred miles down through Colorado, taking in the mining regions; and then 750 to 1,000 miles northwest from Chicago, and down the Great Lakes. Now we add: Nor until he has been up the Missouri River 2,800 miles to Fort Benton, and also at least 200 or 300 miles up the Yellowstone. These trips can be safely and comfortably made at moderate expense, especially in June and July. Steamers run from Sioux City to Fort Benton (over 1,500 miles) and carry passengers the round trip for $75 to $85, or for $50 one way, board included. Sioux City is easily reached by 550 miles of railroad from Chicago. In a year or two a journey to and through the wonderful Yellowstone Park, will be an easy pleasure trip. Exploring the Park portion is as yet rather tedious and expensive. A railroad already extends hundreds of miles north of Ogden in Utah. The Northern Pacific Railroad is built west of Bismarck almost to the Yellowstone, and will reach it the coming winter, or early in the spring, and push on up its valley. So there will soon be a great circuit tour, out over the Union Pacific to Ogden, northward to the Northern Pacific Railroad, and back through the Yellowstone Valley, through the great wheat region east of Bismarck, the Red River Valley, and on down through Minnesota and Wisconsin to Chicago, or via Duluth and the Great Lakes to Buffalo. But one need not wait for that even, to take a trip up the Missouri from Bismarck, or even from Sioux City. Bismarck is 857 miles from Chicago, via St. Paul, and some 750 miles above Sioux City by river. If saving time is an object, one can take the river at Bismarck. If time allows, the river route up from Sioux City to Bismarck—occupying anywhere from 10 to 15 days going up, much less going down—may well be taken to see the country and scenery. The usual single railway fare from Chicago to Bismarck is $33; time, two days and nights.

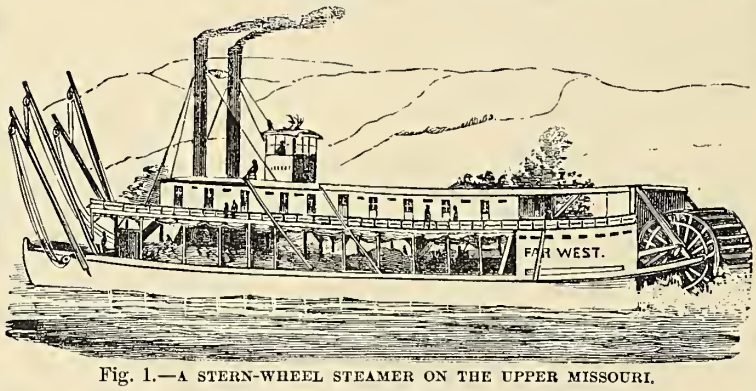


Fig. 1.—A STERN-WHEEL STEAMER ON THE UPPER MISSOURI.

Travelling on the Missouri River,

will be a novelty to Eastern people. The stream for 2,300 miles from its mouth to the Yellowstone, is usually very broad, with shallow water. Sometimes it contracts to a fourth of a mile in width, and at others spreads out a mile or more. The bed abounds in bars of quick-sand, partly above and partly below the surface. See figs. 3 and 4. The *navigable* channel is seldom over ten feet deep, often only two to three feet deep, and usually but a few rods wide, that is between the June and July rise and the freezing up in autumn. The melting snows from the mountains greatly enlarge the stream in depth and width during early summer, and navigation is not difficult. But the channel is very changeable, so much so that a steamer often runs upon a sand-bar in the very place where it went through deep water on its previous passage. At this season (last of August) we have only averaged 65 miles a day, in coming up, and have been fast on sand-bars a dozen times a day, more or less—at one time 13 hours on a single bar, and have "tied up" each night. But this is unusually slow, as the river is very low and the steamer too heavily laden for the water. In higher water much greater speed is made.

Our Steamer—and How it Gets on.

The constant performances of our craft, in the way of getting forward, or backward, or sideways, are "as good as a play." The almost ceaseless call of the man at the bow, as he tests the depth of the current with a marked pole, "f-o-u-r fee-eet," "s-i-x fe-eet, 5 ft., 3½ ft., 2½ ft., 2 ft., 7 ft., n-o-o bottom" (if it is over 8 feet), and so on, each call repeated to the pilot by the man on the upper deck, does not become monotonous, for each passenger is always guessing silently, if not aloud, what will be the next call, and whether we will not bump upon a sand-bar. If we do, the "sparring off," and the way it is done, furnish further entertainment. Enclosed, we send an original pencil sketch of the outline of a Missouri River Steamboat upon which we have passed many days. [The accompanying engravings are made from Mr. Judd's sketches.] All the upper works rest upon a strong flat-bottomed hull, some 4½ feet deep, but sinking in the water only 20 inches or so. Length of steamer about 200 feet; width 45 feet. The hight above water is 23 feet, besides the pilot-house. With so light a hold on the water the boat is an easy prey to the high prairie winds of autumn. It is propelled by the great stern wheel with much force against the rapid current, which often runs 6 to 10 miles an hour.

"Sparring Off."

The bow or front of the boat is loaded 5 to 10 inches deeper than the stern, so that when a sand-bar is struck it can be more easily backed off by reversing the wheel. But it very frequently goes fast on. Then out come one or more "spars." These are logs, 30 to 40 feet long and a foot in diameter, with blunt bottoms to press against the

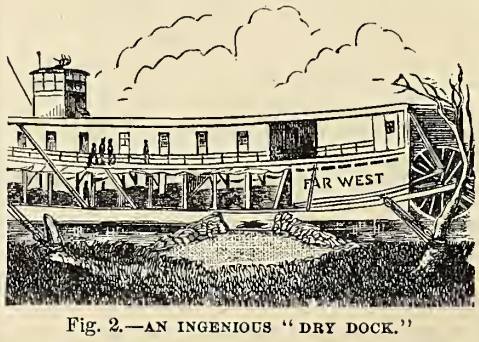


Fig. 2.—AN INGENIOUS "DRY DOCK."

sand or mud, and heavy iron spikes in the lower end. Each spar is hung upon a rope, and raised or lowered by steam force. Powerful ropes run through pulley blocks at the tops of the spars, and around other sets of pulleys fastened upon the sides of the bow. By dropping the end of a spar into the water, and applying the steam power, by means of the capstan, or "nigger head" as they call it, the boat is shoved to one side or the other, or backward. Or if far on the bar, and there is deep water ahead, a spar on each side may lift it over. So some of our progress is really made on "stilts." Owing to the frequent changes of sand-bars, and their uncertain location, the pilots often have to try two, three, four, or more apparent channels, and back out, before finding one that the boat can get through (as shown in figure 4).

An Extempore "Dry Dock."

Our steamer chanced to strike a "snag" (a sunken tree), which opened a rent in her side near the bottom of the perpendicular hull, and this a thousand miles from any repairing dock! Did they give up in despair? Not at all. The boat was run upon a shelving sand bottom near the shore; powerful ropes, fore and aft, were run out to trees, and by steam power the hull was drawn sidewise firmly into the sand (fig. 2). Stones were gathered, and two walls built from the boat to the dry land, one above and one below the fracture. These walls were made water-tight by scores of barrels of mud and sand, and the water was then taken out from between the stone walls, leaving the broken place exposed. It was speedily replanked and caulked, the boat sparred off into deeper water, and on we went, with only a brief detention. These hardy, ingenious, wide-a-wake western navigators are full of resources, and one soon comes to trust to their meeting and conquering any and every difficulty.

Safe and Comfortable Travelling.

Despite the snags, and sand-bars, and the remoteness of the Upper Missouri, travelling is quite safe. Snags are very seldom struck, and then hardly ever seriously. As for these and other annoyances, the enterprizing western men are sure to find a way out, and if worst should come to worst, the river is seldom so deep that one could not wade out to the shore or to a dry sand-bar—a safety not found on deeper water. The state-rooms are comfortable on the larger and newer boats; the fare is good, substantial—in fact good enough so far as we have found it. Those who cannot cheerfully put up with a little inconvenience better not travel anywhere.

The Channel is very Crooked.

A straight-a-way run of 2 or 3 miles is the exception. The river takes great curves, often at sharp

Fig. 3.—THE CROOKED MISSOURI RIVER.

angles, bending back almost upon itself at times. At one place, after going 45 miles, we were only three miles across the neck from where we had passed several hours before. Usually there is, on one side or the other, often on both, a "bottom," varying from a few feet to miles in width (fig. 4). This is a bed of clay and sand and black deposit, 4 to 15 feet above low water, and just above ordinary high water. Where it has been undisturbed a few years, it is often covered with Cottonwood trees, which increase from half to three-fourths of a inch in diameter yearly. But the channel is ever changing—a freshet, the lodging of a floating tree, or other slight cause, will start the water off in a new direction, and so, on one side or the other, the edges of the bottom lands are ever wearing away, and the washed out soil is deposited in the slower current. The water is of course always filled with mud. A tumbler of it standing until settled, will show fully an eighth of an inch deposit. It is a darkish-clay color. The water from the Yellowstone River, we noticed in passing its mouth, is of a slightly reddish or *yellowish* mud—hence the name of that river. The bottom lands are very fertile, and when high enough to be safe against prospective washing out, as is often the case, they furnish most excellent farm lands. On the north side of the Missouri, from the Yellowstone to Wolf River (180 miles, or 90 to 100 miles by land), we should say, at a rough guessing estimate, there are a million acres of fine bottom lands—perhaps more—and there are other millions of acres along the Upper Missouri.——The climate between latitute 47° and 49° though cold in winter, is felt less severely than in lower

countries, and many farm crops grow well. At Berthold Agency, latitude 47° 30', wheat has been grown successfully; while this is one of the leading crops around Winnipeg, which is above lat 50°.

Bench and Uplands.

Back of the "bottoms," a few feet higher, are the "bench lands," extending to the foot of the "bluffs." Sometimes they are narrow strips a few feet wide, oftener entirely absent; sometimes half a mile to a mile or more in width; and, like the bottoms, are sometimes on one side of the stream,

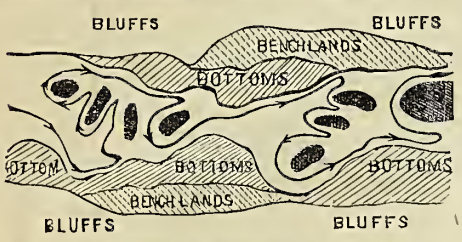


Fig. 4.—SPECIMENS OF MISSOURI SAND-BARS, ETC., AND THE STEAMER'S COURSE THROUGH THEM.

sometimes on the other—seldom on both sides at the same point. These are similar to the average prairie soil, and where they exist in sufficient width, will be excellent localities for farms—for grain and corn especially. The adjacent bottoms supply plenty of grass, and when broken yield corn, potatoes, and indeed all crops suited to the latitude. Back of the bottoms and bench lands where they exist, are the "bluffs" forming the sides of the general river valley, which varies in width, between the bluffs, from half a mile to two, five, eight, and in one place to fifteen or twenty miles, averaging, we should guess, 2 miles, for 600 miles above Bismarck. These are mainly sloping irregular banks, rising 30 to 100 or more feet above the river, the sides cut into dells, or cut down by water and frost, with now and then little valleys running up and out at the top, filled with trees—in which case they are called "Coulies." The bluffs are, however, cut into all sorts of regular and irregular forms, often weird and fantastic, frequently of great beauty, and presenting an ever-changing scenery that gives a charm to one's journey. From the top of the bluffs—which are seldom "bluffs" as that term is usually understood—the country runs back as a level, treeless prairie, more or less rolling in many places; in others broken into hills and hollows, and here and there intersected by the wide "bottoms" of rivers or creeks that flow into the Missouri. A good map will show many of these affluents, some of them of great length, as the Little Missouri, the Milk River, the Big, Little, and Lower Muddy, the Cheyenne, etc., besides the large Yellowstone.

"Bad Lands."

Strictly speaking, we suppose this term applies to those lands which are very hilly, and covered with a dark-colored, finely-broken stone, allowing very little vegetation. It is here, apparently, applied to all land not fit for cultivation, whether too sandy, too dry, or too alkaline. Such lands are frequent, back from the river, along most of the Upper Missouri, but there is much good land also that will in due time, and not very far distant, come into cultivation. The "bottoms" and the "bench lands" along the Missouri and its feeding streams, will afford good land to sustain a population of hundreds of thousands, not to say millions.

Among the Indians.

We write this, surrounded by many thousands of nearly uncivilized Indians, including 1,500 to 2,000 "hostiles," who have come from Sitting Bull's bands, just over the line in British Territory, on a foraging excursion. These all live in Lodges, or "tepees," that is, conical tents covered with tanned Buffalo skins, the hair removed, and sewed together. It occurs to us that our readers will be interested in some brief general notes on the aborigines....For 250 years the Indians have had a certain relation to the agriculture of our country. The ever increasing demand for new land to cultivate has led to a continuous struggle for obtaining it, by fair means or by foul, from the aborigines who claimed ownership and were in possession. The red line of war and massacre, stretching from Canada to the Gulf of Mexico has gradually moved westward, sweeping over nearly the entire country, for two centuries. Many pioneer settlers on the frontier have worked with rifle always at hand for protection, and many have fallen by savage hands.

To-day all this is about Over.

During the past few years almost the entire Indian population has been gathered upon Reservations, and nearly all of them are now peacefully occupying their limited areas. These reservations, marked upon an ordinary map of the whole country show only as small spots, with three or four exceptions—the Indian territory south of Kansas, the Sioux territory in western Dakota, and the one where we now write, viz., that between the Upper Missouri and Canada, including some land south of the river. Leaving out Alaska, the total amount of land thus reserved was reported in 1879 as 258,600 square miles, and the number of Indians of all ages, 252,897. These Indians are grouped under the direction of about 70 government agencies. Over three-fifths of the lands reserved are at three points: in the Southern Indian Territory, 64,214 sq. miles; the Sioux reservation in western Dakota, 49,176 sq. miles, and the Fort Peck and Black Feet reserve in northern Montana, 41,330 sq. miles—in all three 154,620 sq. miles, leaving but 104,000 sq. miles for all other lands allowed to the aborigines, and the recent cession of the Ute territory in Colorado reduces this amount. The total land now even nominally occupied or allotted to the entire Indian tribes is 16,000 sq. miles less than the single State of Texas—or about equalling Montana and Idaho.

Indian Agriculture in the Future.

The present policy of the Government, and of all interested in the welfare of the Indians, is to as rapidly as possible get them to give up the chase, and devote themselves to the cultivation of the soil and stock raising.* And we are happy to report that there is a good prospect that the desired object will be obtained ultimately, if the present policy be carefully and judiciously persisted in for a few years. For example, away up here, 200 miles above the mouth of the Yellowstone, on the north side of the Missouri, we find some 800 Indian families engaged in cultivating their allotments of land, growing as fine potatoes as we have ever seen, very good corn, oats, pumpkins, etc., using all the land that could possibly be broken and seed obtained for it. In a grand Council with the Chiefs and warriors here, an earnest wish was expressed for more land ("much big land"), more implements and more seed. And this too among the most uncultured tribes, many of whom were engaged in the fighting of 1876 when General Custer was slain.

A Most Worthy Consummation

it will surely be, if, as is possible, during the present decade, the entire aborigines of the whole country are settled down to actual agriculture, each on his own farm, deeded to him individually. We can surely grant this. Allowing five to a family, and 160 acres to each family, no more land would be needed than is comprised in less than one quarter of the single State of Illinois or of Iowa, for all the Indians of the country.

PARTLY CORRECTIVE.—In the advance copy of Sept. number, just received, we notice two errors in the last paragraph of Notes, on page 340, which was sent by *telegraph*—an error of the operator, doubtless. We wrote that the wheat crop of Minnesota was unusually fine in the north-*west*. There is comparatively little wheat yet grown in the north-*east* part of this State. Again, in speaking of the Americans and foreigners settling on the N. P. R. R. lands, we wrote the "*former* probably predominating"—not *foreigners*, as the telegraph made it. This is not important; hut it is a matter of interest that, of the new settlers along that road, a large number are from the older States. Foreigners, we judge, go more largely to Western Minnesota, to Dakota, and Nebraska, except where they cross the line to Winnipeg, as many English emigrants do to keep under the same government as at home.

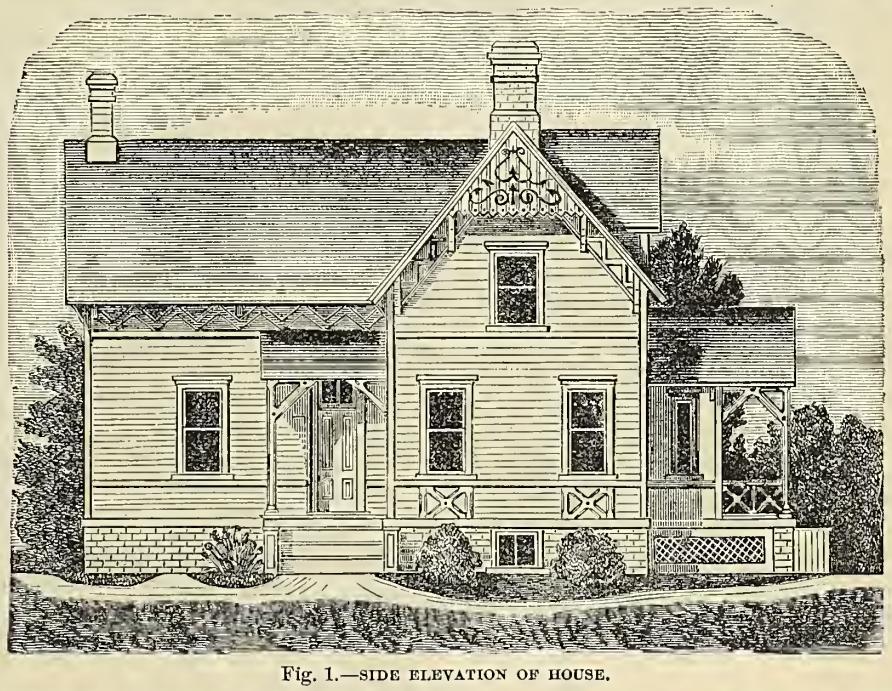


Fig. 1.—SIDE ELEVATION OF HOUSE.

A Convenient Cottage, Costing $1,000.

BY S. B. REED, ARCHITECT.

These plans are for a dwelling similar in character to those published in the September number of the *American Agriculturist*. The divisions and general arrangements are changed, and the side entrances reversed, adapting it to locations having an opposite approach.....**Exterior.**—Two elevations are given. The sides (fig. 1) are 34½ feet long, of which 16 feet forms an end to the front, or main part. The rear or wing portion is carried up to the full hight of the front, and has the same general finish. The front (figure 2), has a breadth of 25 feet, with foundations showing 2 feet above ground. The openings and other parts are symmetrically arranged, and the whole tastefully finished. The principal roofs have a pitch of 14 inches to a foot, giving them unusual prominence. The chimneys pass through the ridges, where they appear to the best advantage. The two porches are sufficiently large to protect the entrances; the front one is furnished with permanent seats at either side.....**Cellar** (figure 3).—Hight 6½ feet. In this climate it is necessary for all trench foundation walls to

* The writer only consented to serve on the Board of Indian Commissioners, because urgently solicited to do so for the aid he could give in this special direction.

extend into the earth from two to three feet to insure them against destruction from frost. If we set our building two feet above ground, and houses in the country should never be less for healthfulness, such foundations, including the portions below and above ground will measure from four to five feet in hight. For the small expense of the excavation, and a few additional bottom courses of rough masonry, all such foundation-walls may be utilized to better advantage, and a valuable cellar will be obtained. With these facts in mind, it will be seen that there is no real economy in trench foundations, especially where it is possible to have a cellar. In this plan the cellar extends under the entire building. Six small windows give light to all parts, and an outside door opens to the area under the rear porch. A flight of stairs lead directly to the kitchen.....**First Story** (figure 4).—Hight of ceiling, nine feet. A Parlor, a Living-room, and

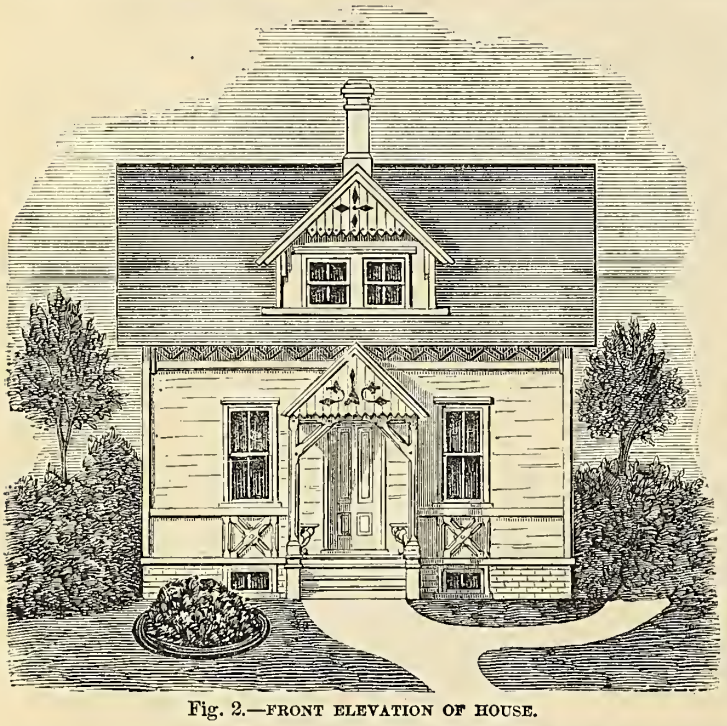


Fig. 2.—FRONT ELEVATION OF HOUSE.

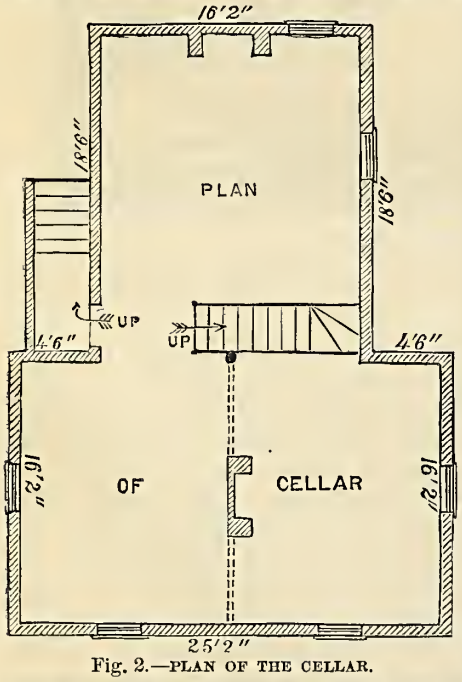


Fig. 2.—PLAN OF THE CELLAR.

Kitchen, each of nearly equal dimensions, form the principal divisions of this story. The two front rooms are entered from the front porch through the vestibule. Each has out-looks to the front and one side. The Living-room is also accessible from the rear porch through the entry. A fire-place is put between the Parlor and Living-room, which may be made to face either way, and suited to the use of a fire-place heater. The latter may be so arranged as to communicate heat to each of the four rooms in the main part. The Kitchen is a pleasant and convenient apartment; it has windows in three of its sides, a large open fire-place suited to the use of a range, two closets and a sink, and communication directly with the rear entry and the cellar stairs. The Stairs to the second story lead from the entry, with platform and winders near the top.....**Second Story** (figure 5).—Hight of ceiling, four and one half feet at the plates, and following the rafters to the full hight of eight feet. There is a hall, two chambers, two bedrooms, and two closets in this story. Each room has good-sized windows, and adjoins chimney flues, giving opportunity for the use of stoves if required. The Hall has a small window just above the stair platform, giving light to the hall above and the entry below. Inquiry is sometimes made as to "what constitutes the difference between a chamber and a bedroom." The term "chamber" is applied to such sleeping apartments as will contain a full suit of chamber furniture, consisting usually of seven pieces; and "bedroom" to such as have only space for a partial suit of perhaps three pieces.....**Construction.**—The foundations are of hard brick and mortar, eight inches thick. The frame of sawed timber; siding, of "Novelty" pattern pine; roofs, of sawed shingles; floors, of spruce T. & G. The windows are glazed with second quality French glass; doors of pine, four-panelled and molded; plastering, hard finished. The casings inside, of white pine, and in the front rooms molded. The mantel shelves are of ash plank, supported on neat trusses. Painting, two coats.....The **Estimate** for the average cost of this building is given below:

75 yards Excavation, at 25c. per yard		$ 18 75
12,000 Brick foundation and chimney, laid, $12 per M		144 00
475 yards Plastering, at 20c. per yard		95 00
2,150 ft. Timber, at $15 per M		32 25
2 Sills 4x7 in. 25 ft. long.	1 Ridge 2x7 in. 31 ft. long.	
8 Sills, 4x7 in. 16 ft. long.	1 Ridge 2x7 in. 25 ft. long.	
2 Sills, 4x7 in. 19 ft. long.	38 Beams 2x6 in. 16 ft. long.	
2 Plates 4x6 in. 25 ft. long.	4 Beams 2x7 in. 12 ft. long.	
2 Plates 4x6 in. 19 ft long.	2 Valleys 2x7 16 ft. long.	
8 Posts 4x6 in. 14 ft long.		
250 Wall Strips, at 12c. each		30 00
30 Joists, at 15c. each		4 50
128 Siding, 9½ in., at 28c. each		35 84
Cornice materials		15 00
300 Shingling Lath, at 6c. each		18 00
45 bunches Shingles, at $1.25 each		56 25
60 ft. Tin Valleys, at 8c. per ft.		4 80
152 Flooring (inside), 9 in. wide, at 28c. each		42 56
30 Flooring (outside), 4½ in. wide, at 15c. each		4 50
6 Cellar Windows, at $3 each complete		18 00
14 plain Windows, at $5.50 each complete		77 00
18 Doors, at $5 each		90 00
2 Porches, $25; 2 Stairs, $16		41 00
5 Mantel Shelves $10; Closet finish, $6		16 00
Nails, Pump, and Sink, $25; Painting, $75		100 00
Carting, $15; Carpenters' labor, $125		140 00
Incidentals		16 55
Total		$1,000 00

Hereford Cattle.—Enterprising breeders and dealers are, it seems, taking advantage of the great favor in which this excellent breed of cattle is held, to buy in England almost everything that is fit to import and has a fair pedigree. One breeder, Mr. T. L. Miller, is about landing some 109 head of Herefords. This "boom" in favor of the Herefords is not to be wondered at. They are one of the ancient *races* of Great Britain, of which the Devon is another, differing from the more artificial *breeds* in possessing a greater permanency of type. Their white faces and strips on belly and shoulders are, though very noticeable, a cultivated feature, to a great extent added within the past 100 years. As we now find them, they are exceedingly uniform in their characteristics, grow quickly, are early and profitable feeders, of good weight, excellent handlers, very low set, a little strong in bone, and the cows reputed poor milkers. They are superior to the Shorthorns on poor feed, stand privation, short pasturage, and lack of water better, at least so it is claimed, and hence are great favorites on the Plains. The butchers favor them

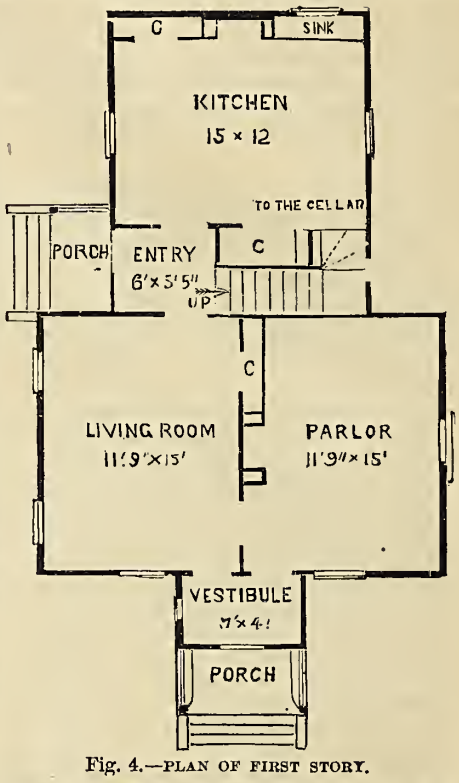


Fig. 4.—PLAN OF FIRST STORY.

because the flesh is well marbled, and cuts up to profit. Their advocates in this country, from Mr. Sotham to Mr. Miller, have been most faithful in presenting their claims as against the Shorthorns, often fairly tiring out the general reader or any one not directly interested. The beasts were not particularly attractive, sold at low prices, had short pedigrees, if any, and were only beef cattle, while their rivals were fashionable, had long pedigrees, were stylish and beautiful, were excellent both for beef and milk, and sold for higher prices than any other breed of cattle by far. Now the tables seem

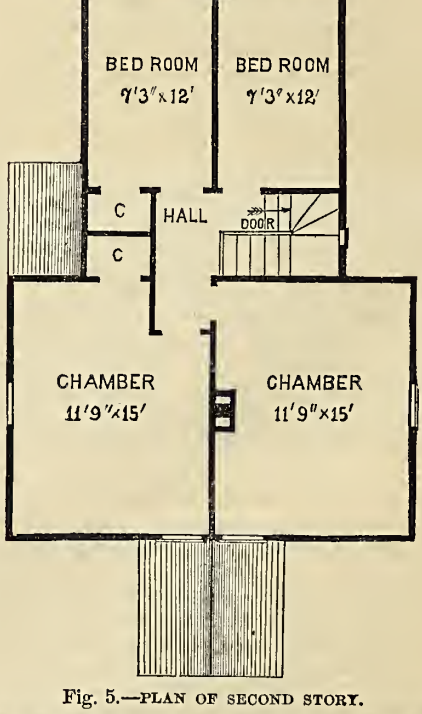


Fig. 5.—PLAN OF SECOND STORY.

to be turning—beef is everything for the far West. Hereford pedigrees are at least sound, while every breeder of Shorthorns is picking all the flaws he can in the pedigrees of every family except the one he breeds himself. Hurrah for the Herefords.

The Jersey Bull "Mercury" (432).

"Mercury" is the only living son of "Jupiter" (93), and "Alphea" (171), he was dropped October 7, 1869, and was bred by Col. R. M. Hoe, of Morrisania. His sire and dam were own brother and sister, the progeny of "Saturn" and "Rhea," who are famous only for having been the progenitors of these two animals, and especially of "Alphea." "Mercury" is a handsome, solid colored animal, as indeed are most of "Alphea's" progeny, and Col. Hoe retained him for his own use, when he sold most of his herd. He subsequently parted with him to his nephew, Mr. Herbert Mead, by whom he has long been used, though repeatedly offered for sale at absurdly low prices. Ten years of service have given him many sons and daughters, and though now eleven years old, he is healthy and vigorous. He was bought last spring by Mr. Wm. Simpson, of West Farms, a near neighbor of Col. Hoe's, at a large price, and now heads his famous and beautiful herd at New Hudson, Allegbany Co., N. Y. His dam, and so many of her descendants have proved extraordinary butter producers, that it gives great value to his blood. About the same time that he bought "Mercury," Mr. Simpson bought his full sister "Europa" (179), the dam of "Eurotas" (2454), an account of which famous cow was given in the *American Agriculturist* for August, page 305. To the record of her butter yield, given at that time, we may here add, that within ten months after calving, that is up to September 10th, she yielded the unprecedented amount of 752 pounds of butter, and is still producing, October 1st, over a pound of butter a day. Among "Mercury's" immediate get there are no cows which equal either his dam or her famous grand daughter, but there are no inferior cows among them, that we know of. Many of the second generation are exceedingly fine animals. Among the bulls the most famous is "Polonius" (2531), by "Sarpedon" (930), out of "Leda" (799), owned by Mr. John D. Wing, and so far as we know the only other "pure Alphea" bull except his sire. What is meant by a "pure Alphea" pedigree, is one which traces on all lines to "Jupiter" and "Alphea" whose blood was identical. So long, therefore, as we have "Europa" and other "pure Alphea" cows, the line of "Alphea's" descendants may be continued without alloy. Mr. Simpson claims for his herd the distinction of having more of the blood of "Alphea" than exists in any other. He is breeding for butter, making all other qualities subservient to this, and has several remarkable young cows of entirely different strains upon which to prove the effect of the "Alphea" cross.

Breeders of Jersies have too often followed the lead of the breeders on the Island of Jersey, who use, with hardly an exception, only yearling bulls, fattening and killing, or selling their bulls, even the best of them, soon after they are two years old. Thus they never know what the quality of a bull's get is, until after his death. Certainly not a wise system. Here we have not done much better, for bulls are generally killed about the time the oldest heifers of their get come to the pail. Old "Mercury's" long life of usefulness and his present vigorous old age, his gentle manners, and the health, good size, and good quality of his latest calves, is a sufficient argument against "turning off" a good bull when just in his prime. "Mercury" has years of usefulness yet to come.

JERSEY BULL MERCURY (432).—The Property of William Simpson, Esq., of West Farms, N. Y.

Seeding to Grass in the Fall.

The common practice of farmers in the North is to seed in the spring, in connection with spring wheat, barley, or oats. We recently visited a farmer who has practised seeding in the fall for many years. He followed spring seeding, and found that the grass seed made a small, poor growth under the oats, and the roots did not get strong enough in the growth after the oats were removed, to carry them well through the winter. He now seeds with rye, using about a hundred bushels of ashes to the acre where he lays down for meadow. His rotation is somewhat peculiar, and prepares the way for the remarkable success of his meadows, which last eight years, giving good crops of grass. In a ten-acre meadow under this treatment in its second year in grass, there were at least two tons of hay to the acre. He begins with the corn crop, applying to it all the manure upon the farm. Corn occupies the ground for one or two years, according to the condition of the land. If rich, mellow, and clean enough to suit his standard, the corn is followed by oats without manure. These are usually very heavy, both in straw and seed. Rye is the third crop in the rotation, taking all the ashes; they are procured from Oswego, and come by canal boat from that city without change to his wharf, three miles from the farm. At the cost of twenty cents a bushel at the wharf, he finds these the best fertilizer for his soil he has ever used. They last for eight years, giving good crops of grass without plowing, and the effects are seen for six years longer in the subsequent rotation. With the manuring practised upon his farm, we have no doubt fall has an advantage over spring seeding. W. C.

Pig-Pen, Hen-House, and Corn-Crib Combined.

BY WM. B. WIGGINS, HINTON, W. VA.

In order to make the most out of farm land in West Virginia, it is found necessary to economize space in erecting the buildings required for successful farming. The accompanying sketches may serve to give the reader the plan for erecting in a hill side, under one roof, the three important farm buildings named at the head of this article.

Figure 1 is a side view; fig. 2, a front view, and fig. 3, a floor plan of a Pig-pen; fig. 4, is a floor

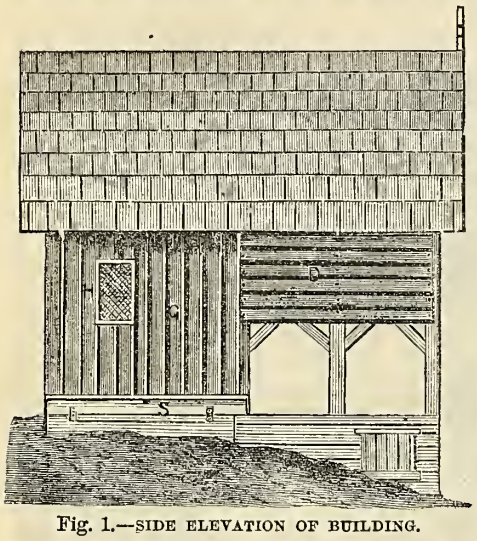


Fig. 1.—SIDE ELEVATION OF BUILDING.

plan of the Hen-house; and figure 5, shows a longitudinal section of the whole building.

The Pig-pen is constructed of stout framing, and where it comes in contact with the hill side, is protected by dry stone walls. The roof of the sleeping room, *B*, (fig. 3) forms the floor of the Hen-house. *G*. To prevent the dirt from one room being thrown into the other, the door of communication between them, *O*, is raised six inches from the floor and an inclined plane with a cleat is placed on either side to make it easy of ingress and egress. The feeding room, *A*, is protected from the weather by the corn-loft floor and the overhanging eaves. The Hen-house, fig. 1, is situated immediately over the sleeping room of the Pig-pen. It is ventilated by a wire-sash window at *H*, provided with perches (*R*, *R*, fig. 4) 18 inches from the floor at the lowest point,

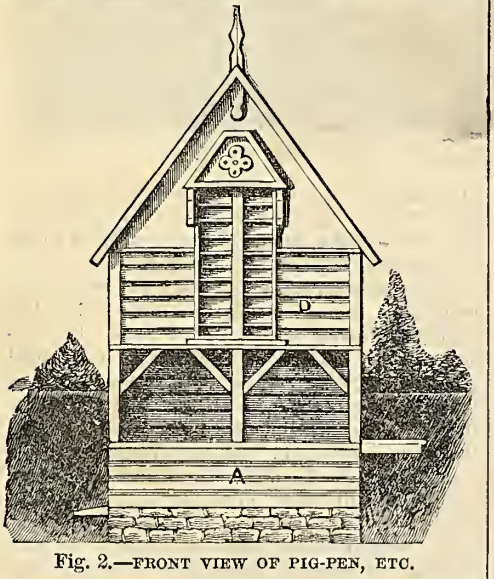


Fig. 2.—FRONT VIEW OF PIG-PEN, ETC.

and nest boxes on two sides, which are reached by doors on the outside, each door being a hinged plank the entire width of the building, as shown at *S*, figure 1. By this arrangement of the nests, the room need not be entered in quest of eggs. As will be seen by the section, fig. 5, the roof of the Hen-house forms an angle of about forty degrees; this being also the floor of the rear of the Corn-crib, it aids by its slope in readily filling the crib. The Corn-crib, *D*, is approached at the rear where a slatted door, corresponding with the large slatted front window, give sufficient ventilation for the corn. At *F*, is the platform from which to fill the crib. The building is 10 feet wide by fifteen feet in length, but may be increased in size as desired.

Sheep Husbandry vs. Dog Raising.

Since the illustration of a remarkable sheep convention in these pages, a number of years ago, at which a dog was publicly executed as a malefactor, sheep raising has made marked progress, in almost all parts of this country. There has been a steady increase in the number of sheep, and improvement in the quality of the wool and mutton. In the latter respect, the change has been quite remarkable in the Northern and older States. We can remember that mutton was looked upon with disfavor in the rural districts, and was seldom seen upon the farmer's table, from autumn until spring. In the smaller local markets, outside of the large cities, it was hardly possible to get sight of a mutton leg, after the new year came in, until the time of lambs and green peas. For half the year, at least, a man of well educated appetite, must needs go to the city, if he wanted a taste of boiled mutton and caper sauce. We are glad to say it is not so now. Though mutton is by no means as common as beef, or veal, in the spring months, the butcher almost always knows of an intelligent farmer, who has a few fat wethers, that have been grained during the winter, which he will dispose of for a consideration. The butcher has customers who know a good thing when they see it, and will not stand on the price of a South-down loin, or leg. Mutton is not as cheap as it ought to be, but still it can be had, every week in the year,

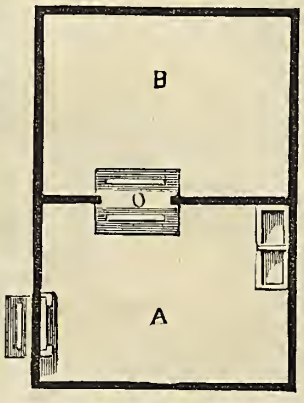


Fig. 3.—THE GROUND PLAN.

if one is able to pay the price. Intelligent farmers, who study the markets, find it profitable to raise the mutton breeds of sheep. A South-down or Cotswold ram, running with their flocks, secures larger and better lambs, which pay well whether sold the first season, or kept two or three years for wool, and mutton. They are not only profitable for their wool, and carcasses, but they improve the pastures where they feed, more than other stock, by the closer grazing, and the more equal distribution of manure. Farmers are taking much better views of sheep husbandry, and in many of the Northern States have secured effective legislation to protect their flocks against dogs, which have always been the great hindrance to sheep raising. Connecticut has an admirable law, which is gradually restraining the dog nuisance. Dog property is heavily taxed, and the thriftless citizen, who inclines to the chase, has to pay for his indulgence. For the male dog, he is taxed two dollars, annually, and for the female six ($6!), so that puppy raising is a rather expensive luxury. The money collected from the dog-tax, goes to pay for the damages inflicted upon the flocks by dogs. We are glad to say, that this law is not only upon the statute book, but is executed with commendable vigilance. Every sheep owner is a spy upon his neighbor, who cultivates dog flesh, and it is difficult to hide any cur of high or low degree from the tax-gatherer. Unregistered dogs are dispatched without mercy. Farmers, as a rule, recover the full value of the sheep killed, or maimed by dogs. The law works most kindly upon the sheep interest, and we shall soon have lamb, and mutton as cheap, and plenty, as veal, and beef. In all parts of the country, there is a steady growth of this interest, as capital becomes invested in flocks that are made secure.

CONNECTICUT.

Rocky Pastures—What to do With Them.

In many of the Eastern States there are rocky pastures in great abundance that have been grazed for a hundred years or more, and do not now yield grass enough to pay the taxes upon them. The stones and boulders are so thick that they cannot be plowed. It would cost from one to four hundred dollars an acre to clear them of rocks by the most economical methods, and it will not pay to do this until there is a great increase of population and a large advance in the price of land. They do not pay as pastures, for the cattle have so far to travel for their food, that they are about as hollow at night as in the morning. If trees start in them they are dwarfed by the perpetual cropping of the cattle. Though poor in grass, these pastures are not necessarily poor land. They may have all the material needed to grow forests, and were probably once covered with a heavy growth of timber. The best thing that can be done with these old pastures in the districts remote from good markets, is to turn them into woodlands. Many of them are already covered with patches of brush and briars, and if cattle and sheep were kept out of them, they would be in a few years covered with young trees. The process may be greatly hastened by sowing the seeds of timber trees, or by planting the young trees. This crop, once started, requires no labor except to keep out cattle by fencing. The value of the capital invested in such lands is small. The growth of the timber for twenty-five or thirty years would be a large interest on the investment. If oak or hickory were planted, there would be several harvests of hoop poles before the final clearing of the main growth of timber. No investment of capital can be more secure than this, and no property more certain to rise in value. Patches of woodland in the midst of cultivated farms are in little danger from fires, for help is always near to extinguish them. The demand upon our forests for fuel and for timber is so steady and persistent, that nothing can be more certain than higher prices for lumber in the next generation. All buildings and structures of wood are short lived, and must be renewed.

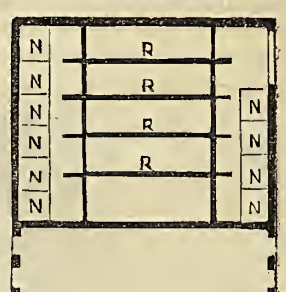


Fig. 4.—PLAN OF HEN ROOST.

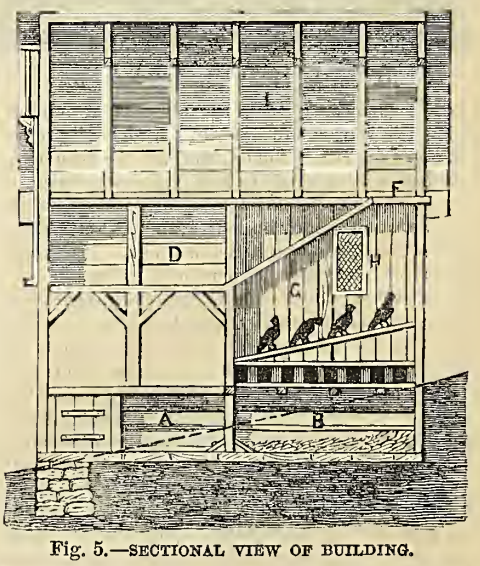


Fig. 5.—SECTIONAL VIEW OF BUILDING.

Railroads consume ties by the million annually. In most farming districts wood will be used for fuel and fencing for generations to come. It fills so many places in the economy of farm life, and in the arts, that we shall never be able to dispense with it. Forests have an appreciable influence upon climate, and in summer drouths and spring floods warn us

that we have already encroached too much upon our woodlands. It is not so much more land, as better land, that we want in all the older States. One acre well fertilized and tilled will yield more profit than ten acres half starved and neglected. We may safely reduce the breadth of our pastures and increase the depth and fertility of our meadows.

Among the Farmers.—No. 58.

BY ONE OF THEM.

Chemists tell us that the bodies of men and animals consist of water, to the extent of 80 to 87 per cent. What wonder, then, is it that water is so important a part of our diet. Next to pure air, pure water is the greatest neeessity of our nature. Whenever a new country is settled, the first houses are always built near springs. Where men colonize—that is, settle a country in groups of families, the settlements are when possible clustered about

Springs of Water.

Springs are less likely to be contaminated by organic impurities than wells, because they are the out-cropping of usually underground streams, and are independent of local sources. Hence spring water is almost always agreeable to the taste, pure and limpid, and uniform throughout the year. There are not a few wells in this region (Bergen County, N. J.), which were origiually flowing springs—now stoned up and appearing as if they had been dug. With these there is always an outflow through the soil, or by some artificial channel.

Wells and Health.

The ordinary source of water in any tolerably well settled region, is the well. Scattered springs are indeed used, but there are not enough of them. So the settlers dig wells, happy if they strike permanent water within 25 feet from the surface. These wells are located with reference solely to the convenience of getting to them from the house, unless, indeed, the striking of a vein of water proves to be an uncertain thing, and the wells are located by the witch-hazel rod, in which cases they may be placed in all sorts of inconvenient positions. The idea of placing them where the source of the water will be uncontaminated is never—hardly ever—considered at all. It is no unusual thing to see the privy vault and the well in near proximity. A well placed half way between the house and the barn, is quite common, and if the harn-yard is fully fifty feet away it may be regarded as a piece of good luck rather than an evidence of design.

The pig-pen generally has a yard which soon becomes a pit full of water in wet seasons—often overflowing and soaking away into porous soil. The house slops are thrown, more often than not, where they will run off into the vegetable garden, or upon the ground close to the privy, where a pool is formed, the overflow of which gets into the vault, perhaps, or evaporates into the air.

Pure and Impure Air.

Defilement to the well water, and certain contamination to the air, come or may come from all these sources. We get on very well for years. The pure air of heaven is a blessed thing. It blows from the north-west cool and bracing; it comes from the east laden with the beneficent rain, and the balmy breezes of the south come to us freighted with the odors of the ocean and the shore, salty and health-giving. It is near home that the air is polluted. I have noticed the odor of a pig-sty two miles off with a piece of woods between, and I have no doubt, had my perceptions not been blunted with the many odors of civilization, or had I come fresh out of the mountains, the odor might have been oppressive twice as far away. The ozone in the air, and the sunshine, and the frost destroy the germs of disease with which we load the air around our dwellings, but the water retains them.

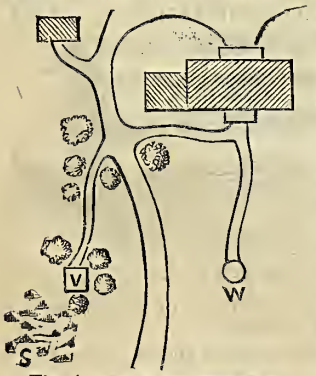


Fig. 1.—PLAN OF GROUNDS.

A Notable Case of Well-Poisoning.

One of the most ancient dwellings in this vicinity, used as headquarters by American officers in the Revolution, and occupied ever since by people of wealth, many of whom moved into the country for the health of their families, has a privy vault located some 60 to 80 feet from the dwelling on lower ground. The well stands near the house, and quite as far from the vault, on ground higher still. The roots of an Ailanthus tree some how penetrated to the water, and were supposed to cause a change in it. So the tree was cut down, the roots cleaned out of the well, and it was supposed to be purified. This season, that dreaded disease, diphtheria, has been in the neighborhood, attacking only those whose systems were adapted to give it a lodgment through the subtle influences of foul air or foul water, decaying vegetation in the cellars, obstructed sink drains, putrefaction in privy vaults, or some such cause. The family occupying the old mansion was visited; nine out of perhaps fourteen persons in two households were attacked, and, for a wonder, only one died—a little girl. Then, of course, everything was examined, cleansed and purified. The privy was found with some four or five feet of water in the vault, as it had been from time immemorial, except in very dry seasons. This was a bubbling, seething mass when disturbed—odorous and vile. Half a barrel of strong solution of copperas was poured into it, and a great change was at once perceived, and not here alone. The well water, which had been used both for drinking and washing, suddenly became very "hard," and upon examination was found to contain large quantities of copperas, showing absoulutely that there was then, and doubtless for years had been, a direct communication from the privy vault to the well. In the accompanying sketches, figure 1 shows the position of the house, well, and vault, and figure 2, the probable relations of things beneath the surface of the ground. *W* is the well, *V* the vault, and *S* indicates the position of the low and partly swampy ground. The dotted line, *A*, *B*, in figure 2, indicates the supposed level of the water in the soil during a wet time, when it is quite probable the flow of water might be from *B* towards *A*. But, after a dry time, when the water level might be as low as the surface of the water as represented in the well, if a heavy fall of rain should take place, the water would rise in the swamp first, and would then flow towards the well, carrying defilement and death, either directly from the vault, or from the soil in the vicinity of it, saturated hy its overflow. This terrible experienee will be unheeded by the great proportion of the population. Other privies will contaminate the wells. "Malaria," as it is sagely called, will cause bilious fevers, and chills and typhoid fever, and diphtheria perhaps, and the air will take the blame instead of the water. The thing to do is to arrest and destroy the germs of disease of every form both in the air and water.

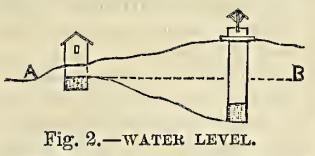


Fig. 2.—WATER LEVEL.

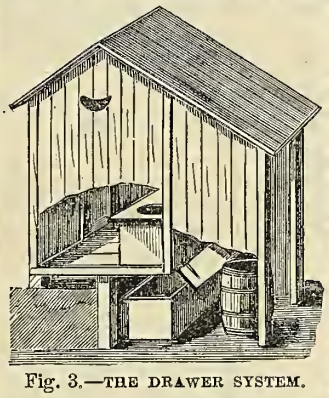


Fig. 3.—THE DRAWER SYSTEM.

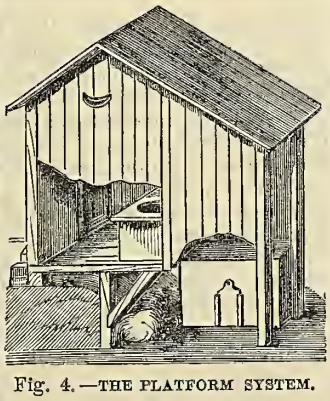


Fig. 4.—THE PLATFORM SYSTEM.

The Plague Spot

of most farms is the privy vault. The older it is, the more dangerous. The only perfect safety seems to be in the earth-closet, or something of the kind. The proper course is to move off the privy, empty the vault and take it up, dig out the discolored earth on the old site, and fill up the hole with earth and stones. Then to arrange the privy with a strong drawer made water-tight, the ends being strapped with hoop iron. This should be placed beneath the seat, and ahout three feet below it. In use, very dry sifted earth is spread over the bottom of the drawer to the depth of about three inches, and the accumulations covered daily with additions of dry earth, or in winter with earth and coal ashes. This may be done in any convenient way, best perhaps, by lifting a shutter at the rear, and scattering in a few shovelfuls of earth and levelling it off. When the drawer is full it is removed by drawing a stone-boat alongside, placing the drawer upon it by means of a crowbar or other lever, when it may be taken away and dumped, either in a compost heap, or directly upon the land. I have tried several methods—having the drawer upon runners—using no drawer, but a platform accessible from the rear, the earth being thrown on daily, and the accumulations removed by the shovel and carted away. For an ordinary family the drawer system is best; for a family of, say, ten members, the platform plan is perhaps most convenient.

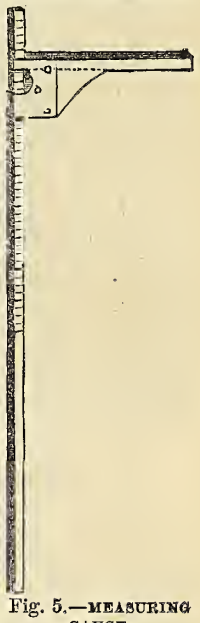


Fig. 5.—MEASURING GAUGE.

Figure 3 represents the drawer system. Figure 4, a privy with a platform. A piece of 4 by 4 scantling, laid down on the platform, keeps the accumulations in place, and there should be room under the extension of the roof for barrels or bins of dry earth, or swamp muck, which, if fine and dry, is just as good as the fine dry earth.

Hand-Gauge for Measuring Horses.

It is often desirable to know exactly the hight of a horse. I have found it so, as I wanted from time to time to know how my colts were growing. The instrument shown in figure 5 is made for this purpose. I found it in use at a sale stable, and constructed one like it. The upright is a square rod of 1¼-inch yellow pine, 6 feet 2 inches long, and from the 6-foot mark downward is graduated by "hands" — a hand is 4 inches, consequently 6 feet, or 72 inches, is 18 hands. The hight of horses is from 15 to 18 hands. That of ponies from 8 to 14 hands, so that we need to have our measuring-rod graduated only hetween 32 and 72 inches. The "hands" are divided into inches, which, of course, are quarter hands, and the inches again into quarters, which is as nearly aecurate as it is nccessary to be. The cross-piece, or index, is also of yellow pine, 6 inches wide at the broad end, and of the shape shown in figure 6. A band of sheet brass, with a piece cut out as shown in the engraving, is bent at two right angles, so that it will slide easily

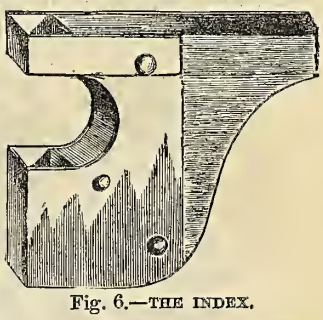


Fig. 6.—THE INDEX.

on the upright; it is screwed firmly to the index, so that the horizontal line which is coincident with the lower edge of the index near the end, shall be accurately at right angles with the upright. In measuring a horse, the index must rest lightly on the withers at their highest point, the measuring-rod standing as nearly perpendicular as possible.

Feeding Trough for Fowls.

There have been a great many feeding troughs devised for chickens and other poultry, but I have

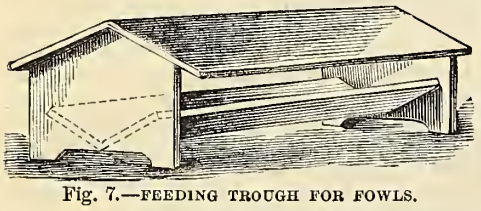
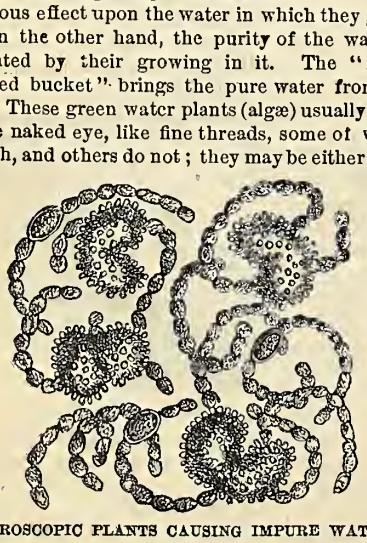


Fig. 7.—FEEDING TROUGH FOR FOWLS.

never seen one so convenient and practically good as that shown in figure 7, devised and used by my friend, Geo. G. Curtis, of Gravesend. It is made thus: The ends are cut 12 inches square, the upper corners taken off to give a pitch to the roof boards. Two 6-inch boards form the trough, and rest on cleats on the end boards, to which they are nailed. The roof is of 10-inch boards, one of which is nailed fast, the other hinged to it, so that it may be lifted like a lid when the trough is filled or cleaned. It has the following advantages: The feed cannot get wet; the fowls are not able to stand or sit on the edge of the trough, and as the space between the edge and the roof is only three or four inches, they can not get into the trough, and even young chickens are not likely to; it is easy to fill, easy to clean out, very substantial, and strong if not made of too great length. Six feet long is about right.

Impurities of Drinking Water.

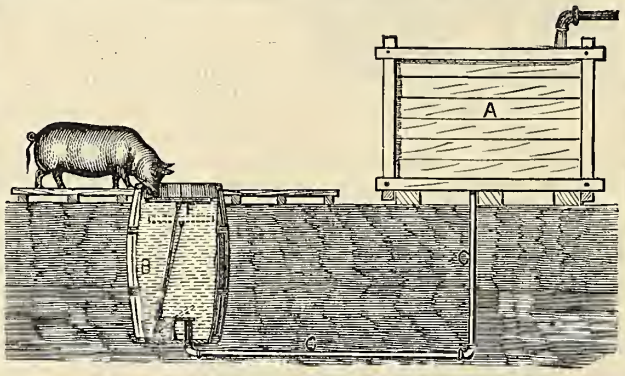
Professor G. W. Farlow, M. D., of Harvard University, has made an extensive examination into the impurities of drinking water, the results of which are valuable to our readers. Professor Farlow states that, under ordinary circumstances no direct trouble is likely to arise from the growth of the larger weeds in our water supplies, provided the plants are living and flourishing. The disagreeable tastes and odors of many of the waters examined were produced by small plants of a very low order of organization—in fact, microscopic. There are two groups of these microscopic plants—those which are grass-green or yellowish-green, and the bluish-green or purplish sort. From a sanitary point of view, the grass-green plants have no injurious effect upon the water in which they grow, but on the other hand, the purity of the water is indicated by their growing in it. The "moss-covered bucket" brings the pure water from the well. These green water plants (algæ) usually look, to the naked eye, like fine threads, some of which branch, and others do not; they may be either floating on or near the surface, or attached to the bottom or sides of the pond, spring, or well. The second group, the bluish-green or purplish algæ, is the one that most interests us, as the members of this group cause some of the most disagreeable odors and tastes found in drinking water. The kidney-shaped, spiny bodies in the accompanying engraving represent clusters of these plants found in impure drinking water, and form a scum upon its surface. Each body is a mass of jelly, in which the bluish-green cells of the plants are embedded. These colonies are very small, and the engraving represents them magnified 300 times. Very small plants have very long names sometimes: this is the *Cœlosphærium Kuetzingianum*. This plant is often found with another, which is filamentous, or like the links of a sausage, and is represented with it in the engraving. These and other plants flourish in warm, and especially the hot weather of August and September, but may be found to a certain extent at almost any season. "So long as they are living, and not exceedingly abundant, they produce no perceptible bad effect on the water; but when large quantities of them decay, they give rise to the 'pig-pen odor,' as it is called, which has in recent years caused considerable trouble and still more alarm." Dr. Farlow suggests no absolute remedy, but states that all water places should be cleared of weeds, and other substances upon which these plants may lodge. "Large and deep bodies of water are less likely to be affected than small and shallow ones, and gravelly bottoms are better than muddy. In one respect the fears of the public may be set at rest. The theory that certain diseases, as fever, are produced by germs of some low forms of plant life, whether true or not, has no bearing on the present case." The microscopic plants that make the water unfit for family use, do not cause the various diseases that have been assigned to them.



MICROSCOPIC PLANTS CAUSING IMPURE WATER.

A Barrel Fountain for Pigs.

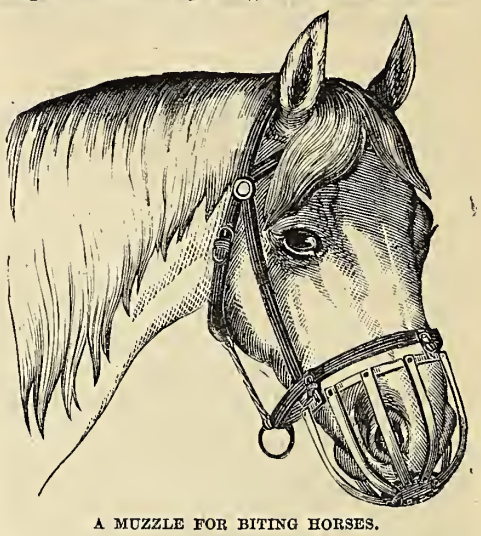
"L. B.," Omaha, Nebraska, while on a visit at Lincoln of that State, gathered, among other valuable things for the farm, some ideas on stock matters of such interest to himself that he ventures to offer them to the public through the *American Agriculturist*. Mr. B. writes: "Mr. C. N. Baird, Receiver of the U. S. Land Office, called my attention to a device originated by himself for watering hogs, of which I give you a rough sketch." The main tank, *A*, is supplied by a windmill and pump. A barrel, *B*, is sunk nearly to its top in the ground, at any desired distance from the tank, with which it is connected by a small iron pipe *C*, *C*, passing from the bottom of the tank to the bottom of the barrel. A float, *F*, is attached by a chain, cord, or wire to a lever valve at the bottom of the barrel. When the barrel is full of water, the float is raised to the surface, closing the valve and stopping the flow of water. As the water is drunk, the float drops and opens the valve, as shown by dotted line in the accompanying engraving, when a supply of water comes in and again the float is raised. By packing the barrel and pipe well with mulch when setting, the effects of cold are almost entirely avoided. The cost of this handy watering barrel is not over five dollars. With this apparatus an unfailing supply of clear, pure water is furnished. He has never had a case of cholera or other disease among his hogs, and volunteers the opinion that filthy food and quarters, and especially lack of pure water in abundance, is the main cause of hog diseases. Mr. Baird objects to running streams for water supply for stock.



A SELF-ACTING WATERING BARREL FOR SWINE.

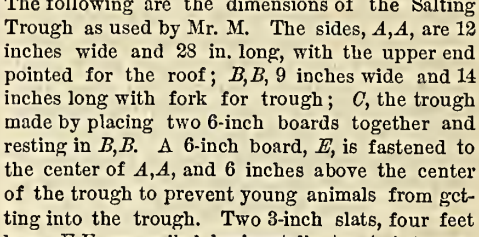
A Muzzle for Biting Horses.

There has been a number of inquiries of late as to an easy and effectual method of curing the habit of biting in horses. This dangerous habit is taught the horses by thoughtless owners or drivers, by playing with them when colts, or teasing them when full grown. A sharp cut with a whip across the horse's nose whenever he bites may serve to break him of the habit; but when the case is worse and incurable, a muzzle of some sort had best be put upon the horse. A muzzle for this purpose may be made of strips of light hoop iron or of leather. A band is made to encircle the muzzle, to which strips of the leather or iron are fastened, and the whole buckled to the headstall, as shown in the accompanying engraving. At the bottom of the muzzle a round piece of leather should be fastened by rivets to keep the strips in place.



A MUZZLE FOR BITING HORSES.

A Salt Trough for Sheep and Goats.—Mr. J. G. McArthur, Meridian, Miss., sends a sketch and description of a Salt Trough for small farm stock, and wishes to give the readers of the *American Agriculturist* the benefit of his invention. Mr. M. writes: "I have resorted to various expedients to place a constant supply of salt within easy reach of my stock without having it wasted and defiled by their feet and droppings....I think that I can now consistently and confidently exclaim Eureka!" The following are the dimensions of the Salting Trough as used by Mr. M. The sides, *A*,*A*, are 12 inches wide and 28 in. long, with the upper end pointed for the roof; *B*,*B*, 9 inches wide and 14 inches long with fork for trough; *C*, the trough made by placing two 6-inch boards together and resting in *B*,*B*. A 6-inch board, *E*, is fastened to the center of *A*,*A*, and 6 inches above the center of the trough to prevent young animals from getting into the trough. Two 3-inch slats, four feet long, *F*,*F*, are nailed horizontally to *A*,*A*, to prevent the frame from turning over. Two 3-inch slats, *G*,*G*, are securely nailed to the edges of *A*,*A*,



A SALT TROUGH FOR SMALL STOCK.

and rest upon *F*,*F*, as braces to strengthen the frame. The roof is made of two 8-inch boards, extending 4 inches over the end as gables.

Fodder Corn: Amount per Acre.—According to Goffart in his work on "Ensilage of Maize," the minimum yield has been 15,000 kilogrammes per hectare; it has risen in 1875 to a maximum of 150,000 kilogrammes upon a field of thirty-six acres. The average yield has been, during six years, about 90,000 kilogrammes the hectare." The minimum

in France is therefore six and two-thirds tons, and the maximum sixty-six tons per acre. A yield of twenty tons per acre is as much as could be reason ably expected, unless the soil has the richness, mellowness, and depth of a fine garden soil.

How to Dress a Turkey.

There is much practical wisdom among the poultry men, that does not get into the papers or books. A turkey raiser who prides himself on sending to market the handsomest lot of turkeys in his town, for the Christmas market, tells us how he dresses his birds. The turkeys are fed as usual the night before butchering, and in the morning are driven in upon the barn floor, as soon as they come from the roost, and are made secure. Their crops are empty, and they can be caught as they are wanted. Make a slip noose of strong cord for each turkey, in an adjoining stable or shed, put the turkey's legs into the noose, and with a small pointed knife stick the bird as near the head as possible. As soon as the bird is dead, strip off the feathers, pinfeathers and all. Cut the neck off as near the head as possible, remove the wings and draw the entrails, before taking the bird down. The turkey is hung up alive, and taken down ready for market. Lay the bird on his breast or side, upon a clean board to cool. Turkeys should be carefully handled in dressing, to avoid breaking the skin, for it rubs off very easily when they are warm. Remove all the pinfeathers and pack the birds when sent to market, in clean straw, so that there will be no marks of blood upon them. Handsome, clean dressing will add a cent a pound, and often more, to the market price of all kinds of poultry.

Pitting Corn Fodder.

The good result which many persons obtained last year in pitting corn fodder, leads this year to the making of many pits, or *silos*, for this purpose, all over the country. So that if there is the least question as to the utility of the process, it will be soon set at rest by a thousand experimenters.

We were much interested in witnessing the filling of the pits built by the Messrs. Buckley Brothers, of Port Jervis, N. Y., whom we visited about the middle of September. It has been their habit for many years to put in a large area of sowed corn, which was cut and put up for curing in stooks, and afterwards housed or stacked near the barns. This year they have a larger area than usual, a large part of which they put down in pits for winter feeding. This matter of pitting or *ensilaging* corn fodder has been carefully investigated by them, and they have made, this year, two pits under the cow-barn floor. These pits (fig. 1) are 22 feet long, 9 feet wide, and 15½ feet deep, side by side, with a two-foot wall between them. They are walled all around and cemented water-tight. They would answer well as cisterns. These two are just built, but there is an old one, 10 feet wide, 50 feet long, and 7 feet deep, which is under the feeding floor. The location of these pits is shown in the accompanying plan, fig. 2. The cow-barn is 120 feet long, by 30 feet wide. The feeding floor is 10 feet wide, and the standing space for the cows is the same width on each side. There is room for 36 cows in this stable, up to the barn floor. The floor, the stalls and all from side to side, was taken up for the filling of the pits, but it will be relaid.

At the time we were there the work of filling was going on in full blast. A pair of powerful mules were at work in the horse power. The feed-cutter stood directly behind them, and cut the stalks in half-inch pieces, at the rate of two tons an hour. It required three men to tend the cutter, taking the corn from the wagon, feeding it to the cutter, and seeing that it was properly shunted off into the pits, where one man spread it as evenly as possible, and tramped it down. At noon and evening half-a-dozen men got into the tanks, and tramped the fodder down as firmly as they could. One man and one team were required to haul the fodder from the field. As soon as a wagon load was brought into the barn, the team was ungeared and hitched to the empty wagon. In the field the teamster assisted in the loading. There were three men in the field cutting up the corn and loading the wagon. Thus the labor required was as follows: Two teams and one driver, four men in the barn and three in the field—eight men in all. With this force they were putting in about twenty tons a day.

The stalks were rather dry; the juice did not squirt out of them when they went through the cutter, and the chaffings were not even moist to the touch. When packed in the pits, a strong fermentation sets in very soon. The corn that had been packed the day before was steaming hot, no doubt having a temperature of 110° to 120° Fahrenheit. It had a vinous odor which was very sweet and pleasant. Mr. Charles Buckley gave us the figures of the cost of these two pits, which is as follows:

Digging, 112 days work at $1.....	$112.00
Masons' bill.....	94.44
Men to assist the masons, 12 days work...	12.00
Bill for Lime and Cement.....	78.10
Total outlay.....	$296.54

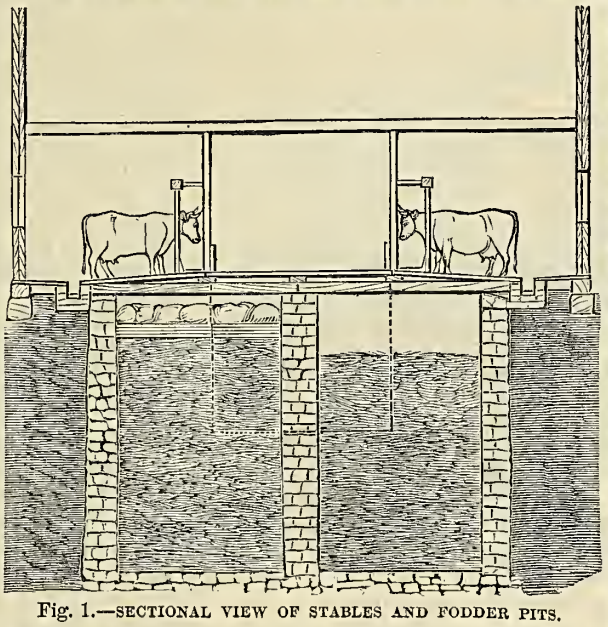


Fig. 1.—SECTIONAL VIEW OF STABLES AND FODDER PITS.

This does not include anything for stone, for the stones taken out of the pit were sufficient for the walls, and more too. Neither is any charge made for superintendence, and no doubt it would be fair to add fully ten per cent for the supervision, and actual labor, which at one time or another the farmer himself gave, or say $325 in all. There were 50 barrels of cement used, and about half as much lime, part of which, 8 bbls., was very good, and the rest, 50 bushels, cheap and of a low grade. The proportion of sand to cement and lime in the mortar with which the walls were laid up, was about two-thirds, but in coating over the surface to make the whole water-tight, nearly pure cement was used. Thus the pits were filled, each one receiving its quota of ten tons, more or less, being well trodden down, allowed to settle over night and again trodden down in the morning before work, all hands being engaged in the tramping. When full as possible, settled and tramped, and beginning to heat in the top layers, it is covered with six inches of long rye straw—any other straw will answer—and this, with a layer of planks, cut to fit crossways, but not so long as to bind. Stones are piled or rather laid upon the planks so that fully one hundred pounds to the square foot rests upon the fodder. Thus it is left for winter use. Filled full, one of these pits will hold sixty tons. That is, containing as they do over 3,000 cubic feet, or 2,400 bushels—at fifty pounds to the bushel, which the compressed moist, and, almost solid fodder will weigh—this is equal to 120,000 lbs., or 60 tons.

As to the keeping, there can be no question, if the work is properly done. A brisk fermentation comes on, as we have seen—as it dose in a tub of apple pulp for making cider. If the air has very slight access it will go on to ultimate decay; but if it is kept out, the little air at first present is driven off by the carbonic acid gas which is formed, and the mass ceases to ferment, and remains as if it were in an air tight case. There is, however, a slight access of air upon the surface and its action upon the juices in the straw and upper layer of fodder is just enough to maintain an atmosphere of carbonic acid gas over the mass—and in the straw which is like a rubber blanket, confined as it is beneath the planks. The stable will be replaced over the pits, and when the time comes for feeding there will be no going out in storms and "slush" and ice to haul in the fodder from out-of-door pits, but the floor will be taken up over a sufficient space, and enough feed removed from one end for two days, when it will be packed down again and covered closely. We think rubber blankets, tarpaulins, canvas, or any coarse cloth painted with boiled oil, would be excellent to pack close down upon the fodder to exclude the air. One thing strikes us as very important, and that is, to *know for a certainty* that there is no settling of carbonic acid gas in the pit, after a considerable opening is made. A man going into a place filled with this gas—as often in deep wells—is over-powered before he knows it, falls and *drowns* as surely as if he were under water, and is even less likely to be resuscitated. The way to *know* whether a man can enter with safety, is to lower a lantern, which, if it burns freely, it shows that there is not a dangerous proportion of gas in the air of the pit.

Selection of Breeding Stock.—The art of breeding may be summed up in the one word, *selection*, or it may be expressed in the common rule of good breeding—"Always select the best." To be able to tell the best is the most difficult point in the breeding of farm stock. The successful breeder must have a clear idea of the qualities sought, and the quickest and best method by which such ends may be reached. He must necessarily be keen of sight to observe the good and bad points, and the causes by which they have been brought about. His judgment must be of the best to suggest remedies for defects, and new methods for bringing out valuable characteristics. "He will prove himself the most successful breeder who can select with the most correct judgment." Edward Hammond—whose breeding in sheep has been so successful, once said, when asked what proportion of the rams bred by himself he would willingly use in his own flock, answered, "Not one in three hundred." This is but an instance of the care, skill, judgment, and, we may add, present sacrifice exercised by the true breeder. We have said that in profitable breeding the selection must be for a distinct and well defined purpose. The first principle in stock breeding was the selection of animals adapted to the circumstances of the given farm, its size, quality of food, etc. The ancients knew that the breeds of animals that had lived for a long period of time on hard fare and a poor soil, would do better on moderate land than

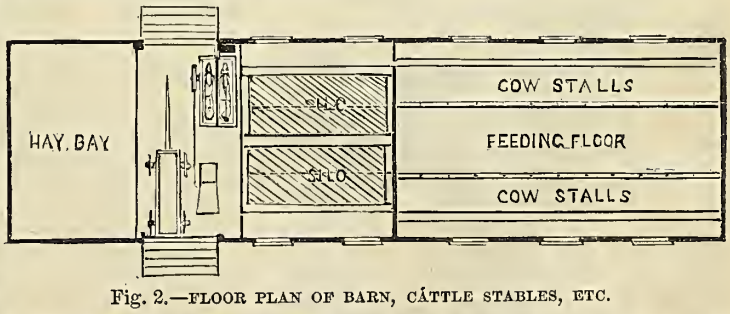


Fig. 2.—FLOOR PLAN OF BARN, CATTLE STABLES, ETC.

those that had the highest kinds of keeping. Animals are much like plants, as they do not thrive well if transplanted from a rich to a poor soil.

How Grain-in-Bulk is Handled.

The enormous and ungainly structures which, to the number of six or more, disfigure our harbor and remind one of Chicago or some other Western grain mart, as one after another they have gone up

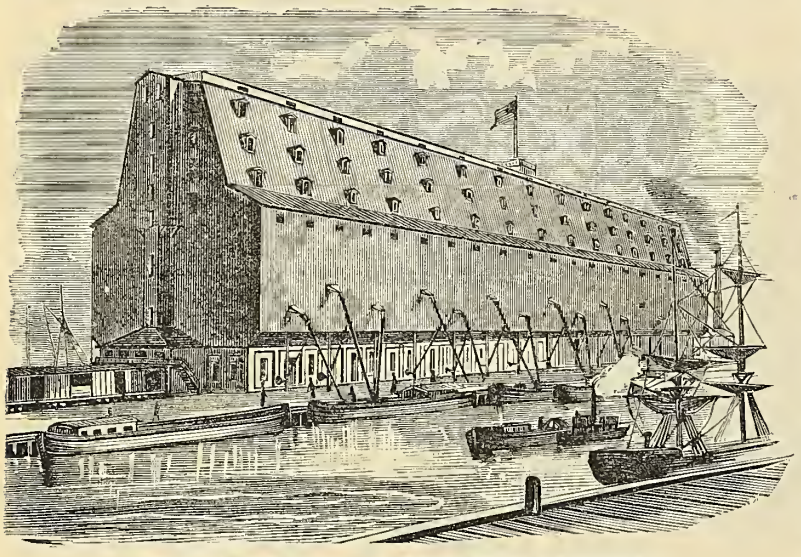


Fig. 1.—A SIDE VIEW OF THE ERIE GRAIN "ELEVATOR."

near the termini of the great railroads, have excited much curiosity among our own citizens, and of course are objects of interest and wonder to strangers. Figure 1, is a view of one of the most conspicuous of these "Elevators," for so they are called, though they might be called Store Houses with greater propriety. This one was built for the Erie Railway Co., and is calculated to hold a million and a half bushels of grain. This amount is, however, considerably in excess of its actual working capacity. This structure stands upon piles driven to the depth of 60 feet into the mud in what was called Harsimus Cove, between the terminus of the Erie Railway (Pavonia Ferry) on the north, and that of the Pennsylvania Railroad at Jersey City proper, on the south. The piles were sawed off below low-water mark, a flooring of heavy timber placed upon them and bolted fast, and the granite piers upon which the building stands, placed upon this flooring. So long as this wooden foundation remains beneath the water, it will remain sound; The main part of the building, all that from the piers to the first roof, is of wood, and is wholly occupied by grain bins. In the construction of these bins 2 by 6-inch yellow pine plank were used;

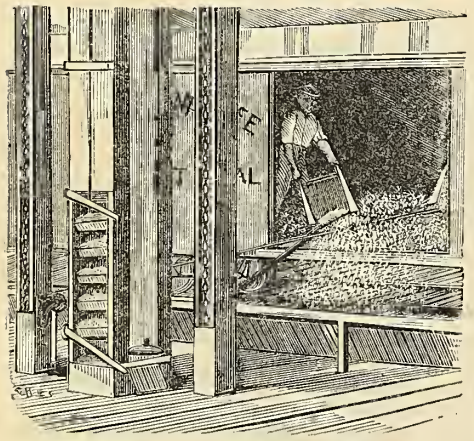


Fig. 2.—UNLOADING THE GRAIN CARS.

2 by 12-inch plank being used for the outside course all around. These planks are all laid flat and pinned together. Of course they break joints throughout, and the whole structure is as solid and substantial as it is easy to imagine. The upper portion of the building is occupied by arrangements for weighing the grain and distributing it into the different bins. This will be hereafter described.

Receiving the Grain.

The grain cars, in which the grain comes from the West, enter the building on double tracks. The cars are placed over grated openings in the floor, between the track and a little to one side. The cars contain about 600 bushels each, and are filled about half full. When in position one door of the car is opened and some of the grain flows out. Then two men appear, each having a broad shovel nearly square, perhaps 3 feet wide by 2½ feet high — having one edge and the sides and top furnished with guards. A rope is attached to each shovel by short chains, and the men spring into the car with their shovels. Motion is given to the rope at once, and each end, with the shovel attached, guided by the man in charge of it, is drawn alternately towards the door of the car, moving perhaps 20 bushels out of the car at each motion. The men have lively work for a short time, and in about eight minutes the car is empty. This operation is shown in figure 2. Meanwhile the grain has passed into a great hopper beneath the track, and has been steadily rising to the very top of the building, by means of a common contrivance of metal buckets upon a band, shown in part in fig. 2, known in grist-mills as an Elevator, but in these grain "elevators" called a "leg." This name no doubt comes from the floating "elevators," in which the grain is raised by band elevators contained in wooden trunks upon the outside, which look a little like great bracing legs. There are twenty of these "legs" in the building, and it is through them that all the grain is elevated to the top, there to be weighed, screened if necessary, and distributed into the various bins throughout the building.

The system by which the grain is distributed to the different bins is very simple. It requires constant vigilance on the part of the weighers, who have the whole of this department in charge, and who have an enormous blackboard, marked off in squares, and numbered to represent each bin, whereon they keep a record of exactly what kind of grain each one contains, and of the quantity.

Cleaning the Grain.

When grain—wheat for example—is to be cleaned, it is of course at the owner's expense, and may be done more or less thoroughly or "hard." It is carried up to the screen by a "leg," and discharged into it. On entering the grain is spread out into a thin fan-like stream which falls upon a perforated metal table, the grain in its fall being subjected to a strong stream of air which is *sucked* through it by a "blower." This draft of air is sufficient to carry up, not only the dust and dirt, straw, etc., but light grains and oats, and if applied with sufficient power will even carry up the wheat itself. The best of the grain falls through upon the perforated table or screen, which is subjected to a rapid shaking motion, like the screens of a common fan-mill. The wheat passes through the screen, the kernels of corn, sticks, nails, jack-knives, nuts, bolts, silver quarters, and such things, remain, and are shaken off at the tail of the screen.

Weighing the Grain.

The grain is weighed when screened and when shipped. The scales are as high up as they can conveniently be placed. The tops of the "legs," and the cleaners are higher, then comes the weighing floor, below this the system of spouts for conducting the grain to the different bins. The scales are capable of weighing a car load at a time, in fact more, but they are not usually more heavily taxed. A weighing is called a "draft," and the "drafts," for convenience of figuring, are of 500 bushels, which, of wheat, is 30,000 pounds, 28,000 of corn or rye, and 16,000 of oats. The grain is delivered by a "leg" into the great hopper-shaped "scale-pan" so to speak, which is so nicely adjusted as to tip the beam as accurately as any grocer's scale. A pane of glass in the side of the hopper-shaped grain holder shows whether it is full or empty, and there is an opening for sampling each "draft," as the grain is received, when that is desirable.

Shipping the Grain.

When grain is to be shipped, the steamer or sailing vessel may come along side the "elevator," and the grain may be discharged directly into her as fast as weighed. This, however, is not now the usual way. The grain is first run into canal boats, for the steamers will not leave their own berths, and at the same time that they are receiving grain, other freight may be taken on board at the docks. The loading of a canal boat is seen in figure 3, and four shutes are directed into the batchways, and a boat is filled in about 35 minutes when three "legs" are used. A canal boat will hold about 8,000 bushels, 480,000 pounds, which is 240 tons or something over 13 car loads. This work goes on so rapidly, that when done as fast as possible, the canal boats can be filled quicker than they can be put in place and taken away from the side of the elevator.

Motive Power.

The whole machinery is moved by two lines of shafting in the upper part, which are run by two very plain, but excellent smooth-running and econ-

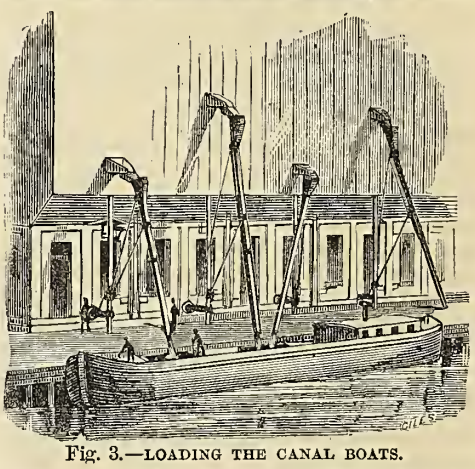


Fig. 3.—LOADING THE CANAL BOATS.

omical vertical beam engines, of 500 horse power each, and exact duplicates of one another. Each one is capable of doing the whole work, and they are run alternately a week or so at a time. The shafting is connected with the engines by long belts of rubber, about 40 inches wide, and each engine runs independently its own line of shafting.

General Management.

The receiving scales, at the time of our visit, were those along the south side, and the shipping scales on the opposite side. These two sets of scales being exact duplicates, may change work.

The "Elevator" is or may be run day and night, and in order to do night work, gas is carried all over the building where work is done. This night work must cause a greater danger from fire, than would otherwise occur. There is always some danger, where there is heavy machinery, more or less liable to friction where it is inaccessible, and when the materials are so very inflammable. To offset this, a pumping engine is kept constantly at work throwing water into a tank in the highest part of the "Elevator." From this there is a constant flow, small indeed, but large enough to indicate to the engineer that everything is all right. If this outflow ceases, he immediately puts on more power and pumps more water according to the demand. The water is distributed along the principal floors, and hose are kept attached ready for instant use.

Some Items in Farm Economy.

The arrangement of the buildings and the division of the farm into fields depends so much upon the character of the farm, the kind of farming, individual taste, etc., that it is out of the question to have a fixed plan that is the best one for all farms of any given size. There are certain general

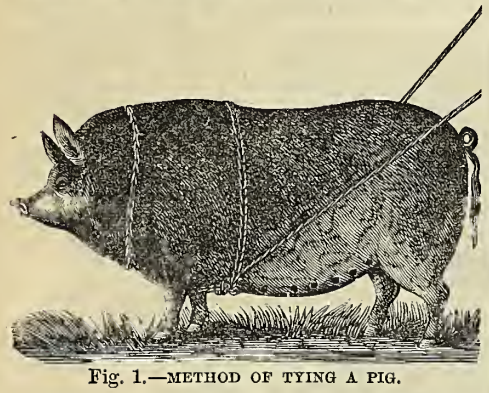


Fig. 1.—METHOD OF TYING A PIG.

principles which should serve as a foundation for the arrangement, but the details must necessarily vary greatly. For example, if possible the barns should be upon a rise of ground where a cellar can be built opening to the lower ground at the rear. The fields should be so arranged that there shall be as little fencing as possible, and so located that all the fields can be easily reached from the lane. A long field has considerable advantage over one of the same area that is square—in the longer "bouts," and therefore less time spent in turning, plowing, harrowing, sowing, harvesting, etc. A pasture close to the stables is always handy, and other things being equal, the orchard should not be put at the rear of the farm, where the wood lot had best be located. There is much labor to be saved in having every thing so placed—and this applies to the various details that seem trivial at first sight—that there will be no extra steps or turns in doing the every-day work of the farm. For example, many days' work can be saved by having the pump in a handy corner of the barn-yard, where the stock from a number of yards may come to the troughs. If the matters of the farm are not already economically arranged, it would be well to make such charges of fences, buildings, etc., as to finally secure the desired end. By degrees the thoughtful farmer will improve his farm until it approximates to a model and therefore an economical farm.

The New York Agricultural Experiment Station.

The Legislature of the State of New York, at its last session, chartered "an Institution to be known as the New York Agricultural Experiment Station," for the purpose of "promoting" Agriculture in its

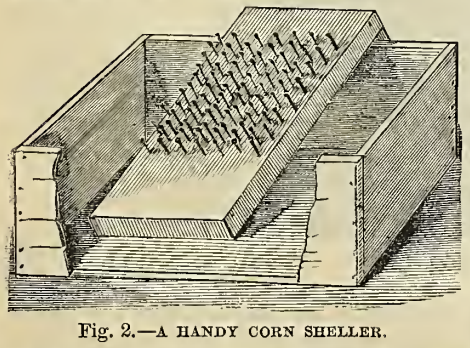


Fig. 2.—A HANDY CORN SHELLER.

various branches. Its management will be entrusted to a Board, and this Board is to be selected by one member being appointed by prominent Agricultural and Horticultural Societies and Clubs, to the number of seven, specified by name—two others to be appointed by the Board itself, and when the dairy interests of the State shall be represented by one Society, then, it may appoint one member. The Governor of the State and the Director of the Station are *ex-officio* members of the Board. The law provides for filling vacancies, for the officers, for meetings, etc., defines the powers of the Director and of the Board, and appropriates $20,000 for two years—as we understand it, $40,000 in all, for carrying out the objects—at least, for making a beginning.

There are several provisions in this act which seem to indicate that this Institution, intended as it obviously is for the good of the whole State, ought not to be so centralized as it would be were the money to be expended in securing land, fitting up experiment fields, stables, dairy rooms, etc., a chemical laboratory and rooms for scientific men to do their work. At the end of two years the results would be very meagre, and we can hardly doubt that a renewal of the appropriation, or, indeed, any appropriation, would be secured with difficulty.

The fact is, there are now within the State several "experiment stations," so to speak, already under way. There is one at Cornell University; and there are private farms where accurate experiments have been conducted, or where preparation is being carefully made for this purpose. We hesitate not to say that there are competent men, gentlemen of wealth, education, and responsibility, in every section of the State who would gladly undertake to conduct series of experiments under the inspection and direction of the Director of the Experiment Station. Furthermore—every large cheese factory, every large butter dairy, and every considerable nursery are experiment stations, ready furnished and manned to do the bidding of the Experiment Station, if approached in the right way, and given credit for their work. So that a little money spent for the actual outlay in case expensive experiments

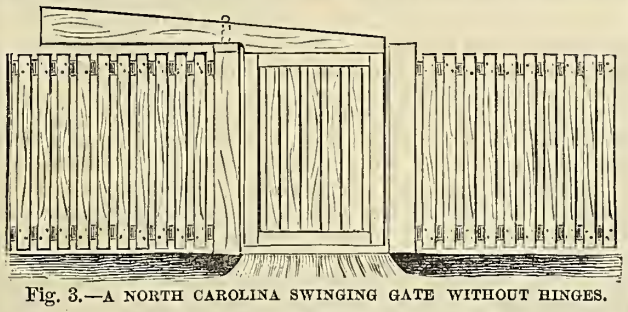


Fig. 3.—A NORTH CAROLINA SWINGING GATE WITHOUT HINGES.

are made, would be the only cost that would be incurred in this sort of experimental work.

Hints and Helps for Farmers.

TYING A PIG.—"J. K.," Coffeyville, Kansas, writes: "In the Nov. *American Agriculturist*, 1879, in the illustration of tying a pig, the rope is right, only it should come underneath the pig instead of along the back as shown in fig. 1. The rope from the neck passing through between the fore legs and then around the body. Take one rope out on each side of the pig, and stand behind the animal with the ropes in your hands. This way of handling a pig is much more valuable than it might at first appear. Nor is it so cruel as tying by the feet or the snout. Try it on your dog with a small rope, and you will soon learn its method, security and convenience. I often use this method of tying a pig."

A HANDY CORN SHELLER may be made from a piece of plank two feet long, two inches thick, and ten inches wide. Drive eight-penny nails pretty thickly into the central portion, just so that they will not come through, and for a distance of ten or twelve inches along the surface of the plank. A small strip should be tacked across the upper end and on the under side to hold on to the top of a box when in use. The corn is shelled by rubbing the ears upon the heads of the nails, the board resting in a slanting position in the box, as shown in fig. 2. We are indebted to a subscriber for this device, whose initials, even, we fail to find upon the letter which accompanied the sketch.

A GATE WITHOUT HINGES.—"One of the readers of the *American Agriculturist*," Charleston, S. C., sends the drawing of "a gate which is in use in Western North Carolina." It consists of a long pole which rests near its middle upon the end of one of the posts, with the gate portion framed into the part of the pole which extends between the posts when the gate is closed. The construction of this pivot-gate is better understood from the accompanying engraving, fig. 3, than any verbal description that can be given. It is quickly and cheaply made, and opens and closes with ease.

CANDLING EGGS.—Many of our western merchants employ a box for testing their eggs, like the

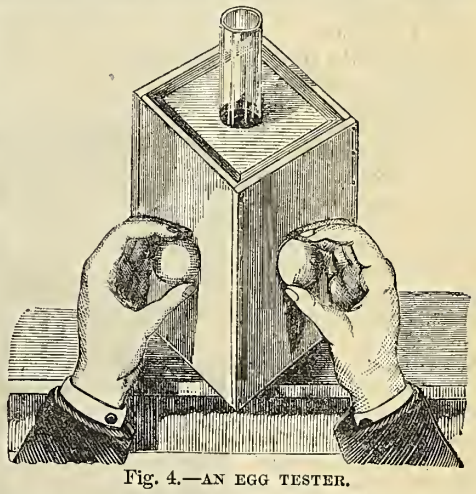


Fig. 4.—AN EGG TESTER.

one shown in the accompanying engraving, fig. 4. It is constructed of an empty plug tobacco caddy, with two holes for the eggs. A hole is made in the top, through which projects the chimney of a common kerosene lamp, and the box is also provided with a suitable door on the back to insert the lamp. The egg-tester is set on the edge of a box or table of convenient hight. By using both hands, an egg in each, a gross can be tested about as fast as one can count. The work should be done in a dark cellar, or darkened room, a place being provided for each grade of eggs, which may be known as clear, cracked, specked, and worthless. J. L. T.

SPLITTING WOOD.—Seeing a boy trying his best to split a section of wood, which would not yield to his axe, I showed him an old method, by which he readily split it. He struck "fair and square" many times in the same place, but did not twist his helve at the moment of striking the wood. The secret of splitting is simply to "flop" the axe, thus making use of the poll of the axe as a lever the moment it enters. While this method seems to be pretty generally known to the woodsmen of the Central and New England States, the choppers of the West and South, and all old countrymen that have come under my observation, know nothing of it whatever; frequently striking a dozen times, where one well directed blow with a "twist of the wrist" would readily part the stick. I find this motion very effective in splitting our western maple, cedar, balsam, and other tough woods. J. L. T.

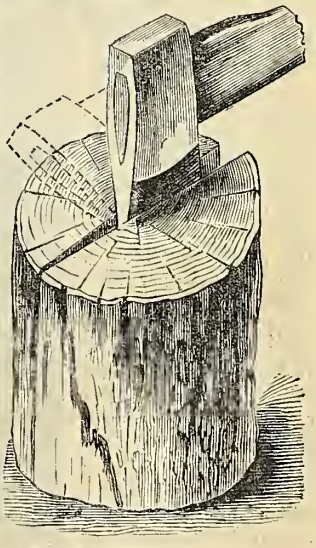


Fig. 5.—SPLITTING WOOD.

Worn-Out Soil.—The quickest and cheapest way to bring up a soil that is naturally poor or partially exhausted from over cropping, is to get some crop that is a "close feeder,"—one that will take up the scattered food rapidly—to grow upon it.

Editorial Correspondence.

Are Large Farmers Desirable?

In conversing with farmers, and others also, as we journey through the country, we hear the frequent expression of a fear that the business of farming will gradually fall into the hands of a few men—those who can employ large capital and machinery, and work at a greater profit and undersell others—and that the competition will "freeze out" the smaller farmers. They point to the example of the Dalrymple, and Grandon, and Watson farms, etc. [See page 422, last month.] There is no cause for fear in this direction. There will doubtless be a number of such capitalist farmers, just as there are a few large merchants. But the fact that there is an A. T. Stewart in New York has not lessened, but rather increased the number of smaller traders. Machinery, system, and wholesale operations in farming are economical under a man of extraordinary executive ability. But the number of persons who can and will carry on such extended operations is very limited, in farming as in trade. The travelling jobbers who supply movable machinery—harvesters, threshers, etc.—place the smaller farmers almost upon a par with the larger ones in respect to implements. The man with a single team can break and harrow his own land, acre for acre, just about as cheaply as it can be done by the man who runs a hundred plows by hired help, and usually more economically. The few great farmers, here and there, such as we described in previous Notes, have been a blessing in that they have been, in one respect, pioneers in showing the possibilities of the soil in certain localities, and called attention to the profitableness of soil culture as compared with other pursuits.

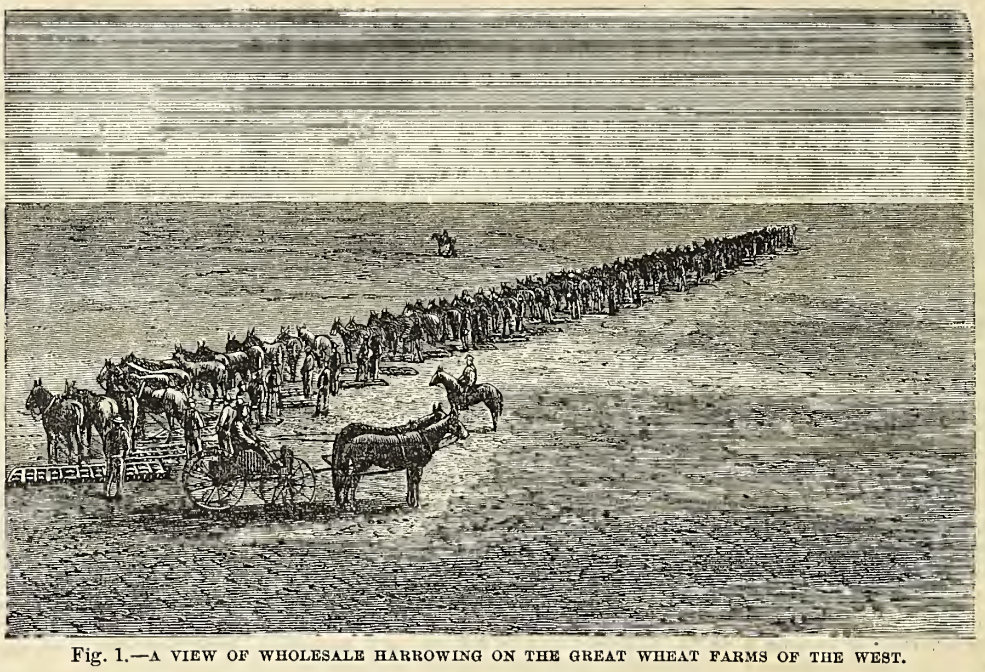


Fig. 1.—A VIEW OF WHOLESALE HARROWING ON THE GREAT WHEAT FARMS OF THE WEST.

Working in Gangs.

In our Notes sent for October (p. 422) we referred to the grand sight presented by 16 harvesters working together. On the steamer we met F. Jay Haynes, of Fargo, Dak., returning from a trip to the Upper Missouri, where he had been taking photographs of various interesting points. In looking over his portfolio, we found sketches of gangs of Harrowers and Seeders at the Dalrymple farms, taken by "instant photograph," which he kindly presented to the *American Agriculturist*, and we forward them herewith. They will give the readers an actual view of these operations as seen on some great farms in Minnesota and Dakota. [Engravings have been made from the photographs forwarded by Mr. Judd, and are presented on this page.—ED.]

Good Land Still Available in Iowa.

During the last twenty years or more we have so often been into and across Iowa, and watched its rapid development, that we had almost come to consider this superb agricultural State as "settled up and finished." But not quite so. Last year we saw sundry good plots still open to purchasers along through the two southern tiers of counties. Yesterday, starting from Running Water, a new village in Dakota, on the Missouri River, opposite the mouth of the Niobrara River, we journeyed by the new branch of the Milwaukee and St. Paul Railroad northeasterly over broad prairies now rapidly filling up by settlers. Today we are passing through the second tier of counties from the northern line of Iowa, and at every Station find quite a number of farmers from the older portions of the West, who have just made new purchases of land, or are prospecting with that object. The crops in most places indicate good land; the prospectors speak well of what they have seen. We are a little surprised to find that there are still several hundred thousand acres of desirable land to be had from the Railroad and others at $3 to $6 per acre, with large reductions in prices to those who buy of the railroad and immediately put it under cultivation—amounting to $2 to $2.50 per acre. Considerable plots are held by capitalists and others in nearly all the north-northwestern counties. The larger portions of the railroad lands are in Clay, Palo Alto, Kossuth, and Emmett Counties. We should judge it preferable to examine the available lands in Northwestern Iowa, before going far into Dakota, though there are here no lands for "homesteading." There is plenty of such land in Dakota, but one needs the skill to select the really good, and to look well to the water supply. If there is a finer farming country in the world than one can find along the Chicago and N. W. Railroad from Marshalltown eastward, we have yet to see it; and the region northward, as we have just seen it at this writing, scarcely falls behind. But these older farms in Eastern and Northeastern Iowa, and indeed in many other parts of the State, can to-day hardly be bought, acre for acre, at what ordinary farm land will sell for on the average in the Middle and Eastern States of the Union.

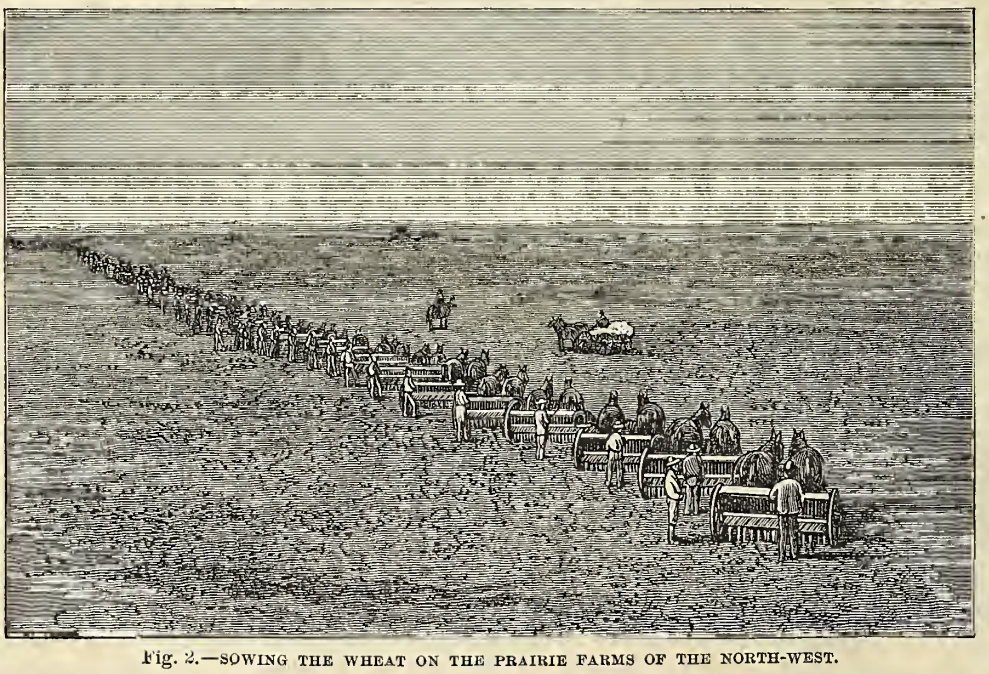


Fig. 2.—SOWING THE WHEAT ON THE PRAIRIE FARMS OF THE NORTH-WEST.

Prairie du Chien
(Dog Prairie).

Some 24 years ago, we visited this town after journeying across Wisconsin, in a tour among the farmers, studying their wants, modes of culture, etc. It was then merely a terminal railway station whence we made our first trip on the Upper Mississippi to St. Paul.—Stopping here now for a night's rest, we have visited the town, or village, (or "city" we believe they call it), which is situated so far back from the river and R. R. station that those merely passing through do not see it. We found it a flourishing place, with some 4,000 inhabitants, and many fine business and other buildings, located on the bench land below the bluffs. Several large and successful Artesian wells are found here—the water rising from a depth of 800 to 1,000 feet, with sufficient force to supply fountains, to run in pipes to the tops of the houses, and save the need of fire engines, and supply power for manufacturing purposes even. We were most interested in a Linseed-oil Mill, just started here by Mr. Famechon, on a small scale, grinding say 25 bushels of flax-seed per day, but to be speedily enlarged. Farmers are receiving about $1 per bushel for the seed. One bushel yields two gallons of oil, and this is now all sold at the mill for home use—the raw oil for 55 cents a gallon, and a few cents higher when boiled, which just about covers the cost of the seed and waste. But it is a profitable business nevertheless. The "cake" is loaded upon cars, and sent directly through to New York, or other Eastern cities, netting about $20 per ton. At the East it is fed to farm animals, producing a rich manure, and thus the prairie fertility is carried to and enriches the worn-out Eastern soils.

There are numerous beds of coal throughout Northwestern Iowa, so abundant and easily reached that it is furnished at the railway stations for $2.50 to $5.00 a ton, according to its quality and the location. It is a soft variety, and contains a good deal of sulphur usually; but it answers a very good purpose as fuel in stoves adapted to burning it—a most beneficent provision for this prairie region. O. J.

(Other Editorial Correspondence given elsewhere.)

A Few Showy Summer Perennials.

Among the more showy plants for late summer and autumn blooming, we find the choicer varieties of Perennial Phloxes, which in their endless variety form a beautiful and attractive sight. Solidagos, or Golden Rods, especially *S. Shortii*, *S. Riddellii* and *S. Ohioensis*, all natives of the Western States; *S. rigida* and *S. stricta*, from the Eastern; and *S. angustifolia* from the Southern States, are among the most showy, and where the space is large enough to grow these tall plants, nothing will show to better advantage at this season. Of Clematises, in addition to the large and late flowering varieties, we may mention *C. crispa*, a beautiful purple, fragrant-flowered sort; *C. Pitcheri*, with dark brownish-purple flowers, *C. coccinea*, with bright scarlet flowers, all natives of the Southern States; and *C. Davidiana*, *C. tubulosa*, and *C. graveolens*, very desirable species of recent introduction; the two first growing upright, with purple flowers, and the latter a rampant climber, with greenish-yellow flowers, followed by silvery plumy fruit. Besides these there are the brilliant-colored Tritomas, or Red Hot Pokers, *T. Uvaria* and *T. Macoweni*, several species of *Liatris*, or Blazing Star, notably *L. pycnostachya*, *L. elegans*, *L. scariosa* and *L. punctata*, all fine purple-flowered plants; and last, but not least, the choicer species and varieties of Delphiniums or Larkspurs, but little grown, as yet, in America. The above sorts, with many more equally desirable late-blooming plants, will serve to make a garden attractive during the early autumn, when there is generally a lack of flowers in the garden.

Frequently we are asked to recommend Hardy Perennials for summer flowering, which will give a constant bloom during the summer months. It is a somewhat difficult matter to do this, especially where there are so many that are showy and desirable. We have been highly pleased this summer with two species which have been in full bloom for the past three months, and bid fair to last until frost withers their tops. The first of these is *Malva Alcea*, or Hollyhock Mallow. Although a very old plant, and well known in collections of hardy perennials in Europe, it is comparatively rare in our American collections of such plants. It is a native of France and Central Europe; grows from two to three feet high, and is profusely covered with large deep rose-colored flowers, two to three inches in diameter. Our plant commenced to flower early in July, and has been one mass of bloom ever since, with an abundance of buds yet to open. From the axil of the lower leaves new stems appear, which in turn produce flowers, so that it makes a constant and profuse bloom. In selecting a spot for planting, choose a sunny place in rich soil, where the plant can have a space at least two feet square. It may be readily propagated from seeds sown early in April in window boxes, or in the open ground in May. The other plant shown on this page is the Mealy, or Silvery Sage (*Salvia farinosa*). It is a native of Texas, and of quite recent introduction into cultivation. Although the genus *Salvia* contains many fine and strong species, natives of different portions of the United States, but few of them are known to cultivation; and most of these are introduced through seeds or plants from English nurseries. This species of Sage grows in large tufts three to four feet broad, and two feet or more high. The individual flower stems are four to six inches long, and are covered with beautiful violet-blue flowers, one-half to three-fourths of an inch long. The flower stem, as well as the leaves and calyx, are covered with a soft, silvery-whitish down, which renders the whole plant extremely showy, even when not in bloom. It has proved perfectly hardy during the past winter in the vicinity of New York City without any protection whatever. Until it becomes more plenty, however, it would be well to keep a plant in a cool greenhouse, or even in a cold frame. A rich, sandy soil, where water does not stand during winter, ought to be selected. Our plant has been in bloom since June, and still (September 15th) shows no lack of buds and flowers, which are constantly appearing. A bed, or border of this Silvery Sage, backed with the Hollyhock Mallow, would make an exceedingly pretty show in the garden during the summer and fall months.

THE HOLLYHOCK MALLOW (*Malva Alcea*).

THE MEALY OR SILVERY SAGE (*Salvia farinosa*).

Watering in Dry Weather.

BY PETER HENDERSON.

A correspondent from Cincinnati says: "The collection of Roses I got from you in May—fifty in number—are getting 'smaller by degrees and beautifully less.' We have hardly had rain for a month, and the thermometer up among the nineties. I sprinkle them every night, but it seems to do no good. What can I do? Let me know through the columns of the *American Agriculturist*, as I suppose my case is a general one, and will interest others."

Stop the "sprinkling," and give each plant a horse-bucketful once a week in dry weather until they begin to grow, being careful to make a tight basin around the plant, so that the water does not run off. When the water has soaked in, the edges of the basin should be raked level for the double purpose of preventing the soil cracking where the water has run, and making a loose surface. If watering is thoroughly done in this way once or twice, it is likely all that will be necessary, for as soon as a plant of any kind begins to make roots—which is indicated by its making a fresh top growth—there is little or no necessity of it being further watered in the open ground if the soil is of average quality. In our own practice we never think of watering plants set in the open ground, unless in cases where late planting is necessary, and then they are individually watered by the bucketful as above, which is rarely done but once. Much labor that can ill be afforded is entirely thrown away in this "sprinkling" of plants. I have seen

market gardeners dragging for weary hours in midsummer along their long rows of celery, sprinkling with rose watering pots, repeating the process day after day—and yet the whole crop failed. If watering is ever to be done at all, it must be done copiously—it is far better to put on all the force a whole day once a week, and do the watering in a thorough manner, than to give a "sprinkling" with the same force an hour or two every day.

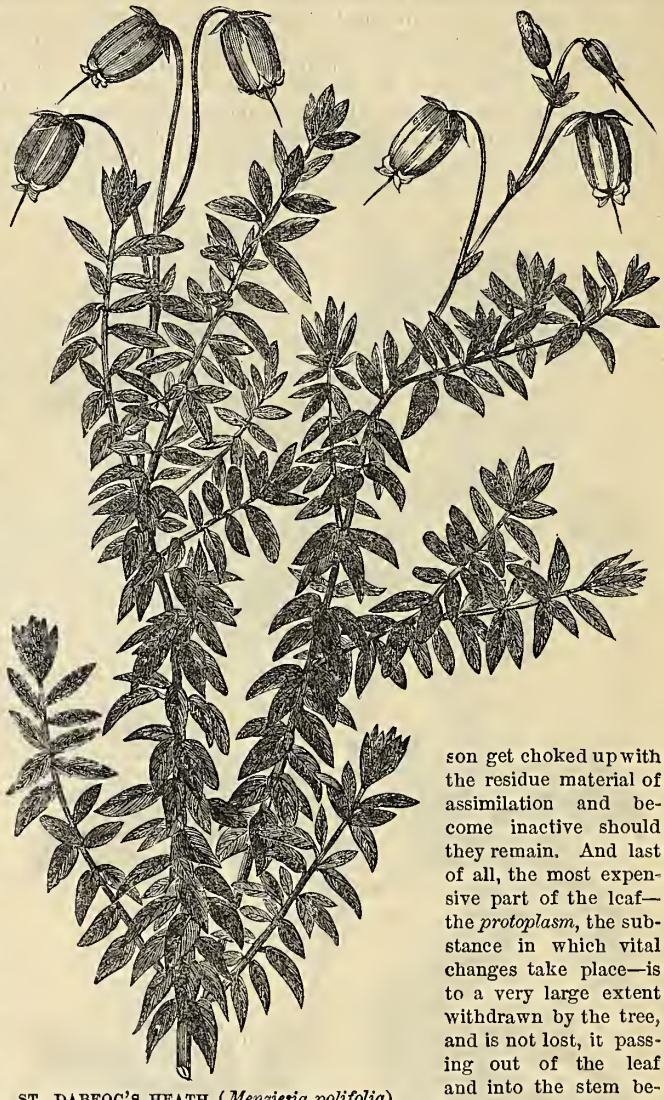
Our Blackberries: The Snyder.

Of over one hundred and fifty known species of the genus *Rubus*, only two, *R. villosus*, and *R. Canadensis*, furnish us the really good varieties of our cultivated Blackberries. *Rubus fruticosus*, a widely known species in Europe, is not the source of any very valuable cultivated varieties; in fact no successful efforts have been made to greatly improve the wild European species. In many parts of our own country the people are satisfied with the fruit furnished by the "brambles" of the fence rows, fields, and wood lots—and it is of such a good quality, and often not lacking in quantity—that the garden culture of the blackberry is thereby retarded. The varieties that now take the lead have been chance seedlings, found growing wild and removed to the garden where they have received careful attention. Thus the Lawton was observed on a roadside in the town of New Rochelle, Westchester Co., N. Y. This variety, called New Rochelle, and better known as Lawton, has done more to introduce the blackberry to cultivation than all the other sorts put together. The liability of the canes to winter-kill, and the unpleasantness of the fruit unless perfectly ripe, has placed the Lawton

A BRANCH OF THE SNYDER BLACKBERRY (MUCH REDUCED).

at a great disadvantage with the Kittatinny, "whose Indian name has become a household word from association with this most delicious fruit. Mr. Wolverton, in finding it, has done more for the world than if he had opened a gold mine." The fruit is large, and when ripe, rich and melting. The plant is a vigorous grower, and with good soil and culture is very productive. The Snyder blackberry originated on or near the farm of Mr. Snyder, near La Porte, Ind., about the year 1851. Like the two above mentioned, it is a chance seedling of the *Rubus villosus*, or High Blackberry of the fields and hillsides. The accompanying engraving was made from a photograph of a portion of a fruiting cane nearly ten feet in hight, brought to our office by E. P. Roe, Cornwall-on-the-Hudson, N. Y. We visited Mr. Roe's small fruit farm and nurseries about three weeks before the Snyder ripened its berries, and were both surprised and pleased at his field of this blackberry. The Snyder is wonderfully productive, as a small portion of one of the fruiting canes, much reduced in size in the engraving, would indicate. The plants are very vigorous and stocky, and ripen their fruit quite early. The great desideratum among blackberries has been one that is perfectly hardy, and this want has been met in great part by the Snyder, which endures without any serious injury the extremes of temperature of the Northern States. The great fault of the Snyder is the size of the berry, which is somewhat below the Kittatinny and Lawton. On this point Mr. Roe says, in his "Success with Small Fruits": "On moist land, with judicious pruning, it could be made to approach them very nearly, however, while its earliness, hardiness, fine flavor, and ability to grow and yield abundantly almost anywhere, will tend to an increased popularity. For home use, size is not so important as flavor and certainty of a crop. It is also more nearly ripe when first black, than any other kind that I have seen, its thorns are straight and therefore less vicious. I find that it is growing steadily in popular favor; and when the Kittatinny is winter-killed this hardy new variety leaves little cause for repining."

The Fall of the Leaf.—During the growing season the leaf is the seat of great chemical activity. In the green tissue, which is spread out to the light and air, the crude materials, which come from the soil and the atmosphere, are transformed into new compounds, and then go to build up the various parts of the growing plant. As the season draws to a close, the work of the leaf also comes to an end; and in decay it often assumes gorgeous colors and finally falls to the ground. At first thought it might seem that in the annual production of leaves there is a great waste. Leaves should be on the outmost branches to be in the sunshine; they must therefore appear on the new growth, that is, come in the spring and go in autumn. Leaves in one season get choked up with the residue material of assimilation and become inactive should they remain. And last of all, the most expensive part of the leaf—the *protoplasm*, the substance in which vital changes take place—is to a very large extent withdrawn by the tree, and is not lost, it passing out of the leaf and into the stem below, before the leaf separates from the stem. In the fall of the leaf in autumn there is a gain in many ways instead of a loss.



ST. DABEOC'S HEATH (*Menziesia polifolia*).

A Rare Shrub—St. Dabeoc's Heath.

Among the smaller shrubs which have been under cultivation in our grounds the past few years, is the *Menziesia* (*Dabœcia*) *polifolia*, or St. Dabeoc's Heath. It is a native of France, and is also found sparingly in Ireland. The flowers are of a beautiful pink, bell-shaped (nearly half an inch long), and drooping, as shown in the accompanying engraving. This pretty little Heath commences flowering in July and remains in bloom until after the middle of September. There are a number of varieties of this species found in Europe, the white one being the only one we have seen. They make very pretty shrubs for herbaceous borders, or for planting among other dwarf-growing plants. So eager are many American planters for rapid, vigorous-growing shrubs and plants, that they entirely overlook these little gems, which require some extra care in growing. There are numerous species of Ericas, or Heaths, found abundantly in various portions of Europe, which do very finely here in our borders, but are rarely if ever seen in gardens. The number of rare and little-known Ericaceous plants found in our own country is by no means small. The common Heather, or Ling, of Europe is perfectly hardy in the United States, and can be grown easily if a little care is taken at the start. *Epigœa repens*, or Mayflower, is easily grown if attention is only paid to getting good plants with good roots. They should be taken up in October and potted in good leaf mould and sand, and placed in a cold frame or cool greenhouse, where they can form new roots,

and by spring are fit to plant out. We should be glad to see more attention paid to these small shrubs by our planters and lovers of choice flowers, for we know that no class of plants are more desirable where the space that can be devoted to them is small. A sandy soil, well mixed with leaf mould, is suitable for growiug this class of plants, though it is found that the Ling, Trailing Arbutus, and the early-flowering *Erica carnea* do well in sandy soil without leaf mould. We have often heard it said that our climate is not suited to growing such plants, but from an experience of some years with them, we see not the slightest difficulty if proper care is given at the start. A bed of these *Ericaceous* plants in our grounds is a constant source of pleasure duriug the whole season, as there is scarcely a week during the summer that some varieties of *Erica*, *Andromeda*, or *Menziesia* are not in bloom.

The Importance of a Farm Vineyard.

The great increase in grape culture is encouraging. California has thousands of acres in vineyard, and nearly all the European varieties of grapes are produced in the greatest perfection and abundance. Extensive vineyards have been planted in the Ohio and Missouri Valleys and in favored localities in the Northeastern States. New varieties have been originated and widely distributed, that are hardy enough to mature in every State in the Union. Our large cities and many of our villages along the line of railroads are fairly supplied with good grapes in their season at reasonable prices. It has been demonstrated that every farmer and villager in the land can have an abundant supply of this delicious fruit for four months in the year, for the trouble of planting and caring for a few vines. Our horticulturists have done the pioneer work of hybridizing, and originating new varieties that stand the test of soil and climate in all the States. And yet California is the only State where the grape may be said to be fairly popularized. The great mass of our farming population do not enjoy this luxury, and multitudes a little remote from market towns are only acquainted with our wild varieties. The grape ought to be as widely disseminated as the apple, and there is no good reason why it should not be. The large vineyards can supply our city population, but to supply the agricultural districts, grapes must be grown at home. This can be done, at so small cost, that no man who owns a home with a half acre of land has any apology for depriving his family of grapes. An eighth of an acre in vines will supply a family and leave a surplus to sell. Any well-drained land that will produce sixty bushels of corn to the acre may be expected to produce good grapes. Well-prepared borders, with a good supply of bones, are desirable, but by no means essential. A dressing of wood ashes is an excellent fertilizer, but any manure good for corn will be good for the vines. The varieties which do well under the greatest variety of circumstances, and bear neglect best, are such as the Concord, the Hartford Prolific, and the Ives Seedling. There are grapes of much better quality than these, but they are good enough to suit the popular taste, and are hardy. They can be relied upon to bear fruit every season in generous quantity The Ives has a thick skin and is particularly desirable to pack in boxes for winter use. They have been for years before the public, are thoroughly tested, and can be furnished very cheaply by any nurseryman. A cheap trellis of chestnut posts and wire will be all the support they need. A four-months' supply of grapes will promote health in the family, save doctors' bills, and prove an important part of the food supply. W. C.

[Feeling the importance of the grape vine upon the farm, we gave, in 1878, a series of artieles headed "One Grape Vine," in which directions for planting, etc., were presented at considerable length. These artieles, judging from the many letters they called forth, met the wants of a large class The matter of pruning the vine was thoroughly explained with illustrations in the April number of the present year, to which the interested reader should turn for hints on this important part of the work of the farm vineyard.—Ed.]

The Corn Smut (*Ustilago maydis.*)

The Smut in Indian corn, which has long been an annoyance to farmers, is a fungus, and therefore a minute parasitic plant, which, instead of growing from the soil and elaborating its own food, vegetates in the growing tissue of the corn plant, and robs it of its nourishment. It is difficult for any one to tell,

Fig. 1.—A BADLY SMUTTED EAR.

owing to its minuteness, just when and where the smut plant begins its growth upon the corn—it may be that the spores, or seeds, of the parasite are clinging to the grains of corn and are planted with them. As the moving air is known to be constantly carrying invisible fungus germs from one place to another, it is more probable that they first reach the corn plant in this way, and enter it by germinating upon the surface and sending the young threads into the substance of the stem and leaves. After growing for a time, the parasite prepares for the production of a new crop of spores, by means of which the smut plant is perpetuated. This it does by first accumulating a mass of threads in certain favorite portions of the plant, usually the young grains of growing corn. At first the affected grains are noticed of unusual size, followed shortly by a darkening of the interior, together with a constant increase in size, until at last the grain has assumed large dimensions, is soft throughout, and made up almost entirely of a sticky mass of black spores. Figure 1 shows an ear, the grains of which have been thus transformed by the infesting smut plant. On account of the ears of corn being covered with husks, the early stages of the smut are not seen, and the first that is observed is the black, worthless mass that is the final stage of the parasite. In fig. 3 an ear is shown in which but a few scattered grains are smutted, and the difference in their size and shape is strikingly contrasted with the normal ones

Fig. 2.—PORTION OF SMUTTED TASSEL.

around them. The production of spores is not entirely confined to the grains, but they frequently make their appearance in the male flowers situated at the top of the stalk, and composing what is commonly known as the tassel. A portion of a tassel thus affected is shown in fig. 2. A few of the small, dark-brown spores, which make up the mass of smut, are shown in fig. 4, and are magnified about five hundred times. The number of spores that a single smutted ear will produce is almost beyond computation. Corn Smut is injurious to animals if eaten by them to any considerable extent; it acts both as a poison and mechanical irritant. Moist seasons are peculiarly favorable to the development of the Smut plant—therefore it is much more common one season than another. If the Smut plant enters the growing corn through the seed with which it has been planted, a treatment like that used for seed wheat to prevent Rust may be of value in preventing its occurrence. This is to wet the corn before sowing with a solution of Sulphate of Copper (blue vitriol), and dry it with lime. The best way to rid a field of this pest is to pass through it as soon as the smutted ears appear and gather and burn them.

Fig. 3.—PARTLY SMUTTED EAR.

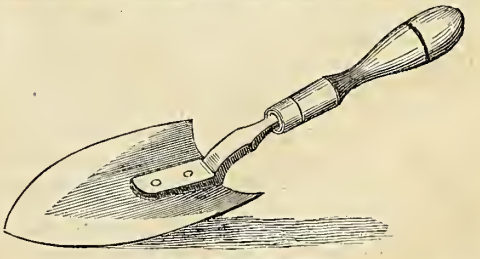
This both keeps the smut from the live stock and prevents it from shedding broadcast the millions of spores. Other kinds of grains are infested by fungi and have their shape and properties changed even more than in case of the corn. Thus the Ergot or "Spurred Rye" is the grain of the rye greatly distorted by the growth of the parasitic fungus, producing a much more poisonous substance than the common corn smut.

Fig. 4.

Handy Home-Made Garden Tools.

BY J. L. TOWNSEND.

Garden Trowel.—In but few country places can a gardener's outfit be purchased, and after waiting in vain for our hardware stores to offer garden trowels for sale, my next expedient was to make one. Selecting a piece of an old steel shovel



A GARDEN TROWEL.

blade from the "catch all" of our village blacksmith shop, I soon produced a blade which was supplied with a shank by the blacksmith, while I turned a hard-wood handle for it on my foot lathe.

Transplanting Dibble.—He who keeps a box of odds and ends, will find that many a useful tool can be fashioned from the broken parts of others. Needing a garden dibble, I resorted to my box of iron old and found a shank from a broken hoe. I cut off the small piece of the hoe blade, straightened the shank and pointed it, and inserting a neatly turned wooden handle with a rather large head, I secured for my work a very handy tool.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Home-Made Picture Frames.

(BY CARRIE CLOVERNOOK.)

"We girls" at home have, as the dealers say, made a specialty of frames. We took some plain molding that had done duty on an old-fashioned door-casing, had it measured and sawed into shape, and with the help of a single sheet of dark pebbled paper, and one-half sheet of gilt, made a frame that, I think, no one has suspected is not really rosewood and gilt. We have paid homage to the white, short-lived beauty of frames of parched corn, and the long list of odd and rustic devices that we have seen in print, or been shown us by friends, but none of us had thought it possible that any beauty could be hidden in coarse brown wrapping paper. First, a frame of suitable size and width for the picture selected must be cut from stiff pasteboard, figure 1, taking care to have it perfectly true. An old box-cover will answer the purpose very well. If you have never seen brown paper well varnished, it may be best to select several bits of different color and texture, and apply two good coats of varnish, then you can easily decide which should be used for the frame; that of medium thickness and stiffness is best. Cut out squares, of three-fourths of an inch in size, figure 2, fold with the fingers, first from corner to corner, then double again upon the remaining corner, making a triangle of four thicknesses of paper, figure 3. Sew these small triangles on the outer edge of the frame, and also on the inner, letting the points reach out beyond the edge, and also overlap so that the middle of the base of the first will be touched by the lower point of its next neighbor. Continue to sew rows on the frame from each edge until the bases of the triangles meet in the middle of the frame, remembering to have the outer points of the second row fall over the opening between the points of the first row. When the frame is filled, if its sides are straight, a narrow strip of paper, with edges folded in—laid over the bases—will finish it neatly as shown in figure 4. I ought to have mentioned at first that loops of strong tape should be sewed on the back for convenience in hanging, which can best be done before the front of the frame is made. If the frame is oval in shape, a strip would not lie smoothly; and squares, like the first used, but folded to retain their first shape, one-fourth the size when finished, are laid on over the bases, overlapping each other. Some may think them prettier for any shape of frame, than the strip. When well varnished it is completed. Thin soft corn husks can be used in the place of paper, in their natural color or dyed.

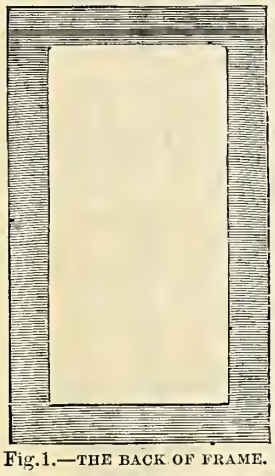


Fig. 1.—THE BACK OF FRAME.

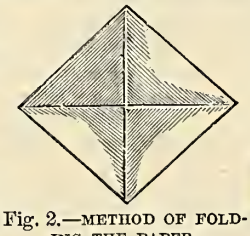


Fig. 2.—METHOD OF FOLDING THE PAPER.

Another style of paper frame, which I like better than the first, is made by cutting strips of paper, one inch wide, and one-half inch longer than twice the width of the frame measured in an exact diagonal. Fold the whole strip so as to halve the width, find the middle in length, fold a point in such a way that the equal arms shall be sides of a right angle, as shown in figure 5. When enough of the pieces are prepared, they will be managed more easily by commencing the frame half way down the side. Sew the first by the point a little over the outer edge of the frame; fasten the second so that the arms shall be parallel with the first, that which lies on one side should have the arm placed *under* that of the first, that on the other side should be *over* the other arm of the first, as shown in fig. 6. When all are sewed on—interlaced like basketwork—fasten the ends on the inner edge of the frame,

Fig. 3.

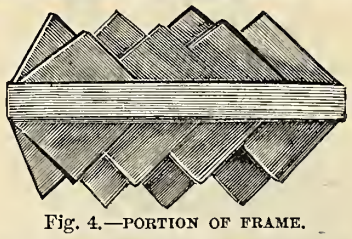
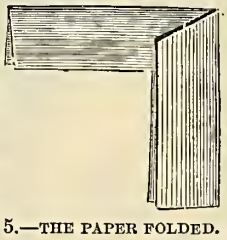


Fig. 4.—PORTION OF FRAME.

trim evenly, and finish by a narrow strip of the same or of gilt when the frame is dry, from varnishing. The corners of the frame will be improved by a rosette of points to hide the irregularity. Figure 7 shows such a frame complete. If oval, the basket-work can easily be carried around the frame, but some other finishing will be needed for the inner edge—an oval of gilt paper cut in tiny points is as pretty as anything I can suggest. If preferred, half the strips can be of light paper, the others dark, when interlaced they will look well, but I prefer the dark, that, when finished, is almost the color of rosewood.



5.—THE PAPER FOLDED.

Home Topics.

BY FAITH ROCHESTER.

A Fashion Note.

I don't pay much attention to the fashions. There is such a variety of patterns, both old and new, the old coming new again, "as round and round we run," that no woman can tell what is the "very latest style," unless she "gives her mind to it" to a degrading extent. Amid the conflicting reports I hear at last one announcement that gives me pleasure: "*Simplicity is elegance now!*" Indeed! When was elegance anything else? Here we are all bunched and upholstered and tied back, with ruffles and shirrs, and pleatings, and pipings, all over us, in dutiful obedience to Fashion's behests, and *now*—"simplicity is elegance!" Here are our best silks and satins all cut up and shirred, and plaited according to directions, and it is no easy matter when the eye is wearied, and the taste nauseated with fussiness upon fussiness, to get rid of our ruffles and plaitings, and straighten and press out the slashed and shirred goods—into elegant simplicity.

I knew it would come to this—though after all I doubt whether it has really come; an era of simplicity in dress, a little rest from the long reign of "fuss and feathers." It cannot have come to stay, for woman is not yet sufficiently educated to understand the reason and use of clothing, and the first principles of beauty and art. The earliest, or barbaric, idea of dress was mere ornamentation—paint and feathers, and tinselry; and woman has not outgrown it. Thousands of women individually know

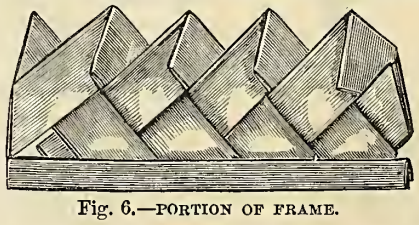


Fig. 6.—PORTION OF FRAME.

and keenly feel how disgraceful and degrading this is, and they wear clothes which they emphatically condemn as uncomfortable, inconvenient, and ugly. They conform to the changing fashions, avoiding the most glaring outrages, because singularity in dress, without great wealth or beauty to back it, is social martyrdom, affecting not their own happiness alone, but the comfort of their friends. Few of us are as independent, in this respect, as we might be. Most of us could wear fewer ruffles and furbelows, without any loss of self-respect, or of the esteem of the community at large. We might all help to create the public opinion, that good comfortable and serviceable fabrics are more important than pretty trimmings, and that comfort and convenience of clothing are essential to genuine beauty and grace.

A Fashion for Mothers to Keep.

The warm, colored, outside drawers for little girls ought not to be given up. Many still wear them, but I think they are less common than they were a few years ago. Woolen under-drawers reaching to the ankles are necessary for girls and women in winter. These being the real "under-clothing," it is hardly reasonable to put white cotton drawers over them—the same as are worn next the body in summer. For warmth and protection, strong, colored, woolen cloth is the best that can be found. Being an outer garment in reality it seldom needs washing, and to most mothers this is a recommendation. Fastened with a band below the knee, the dress skirt will usually conceal the drawers, and when exposed there is no sacrifice of modesty. It is such a serious task to keep the long merino stockings darned on the knees, that I think we do well to encourage a style of dressing the lower limbs, that relieves us from this needless labor. The banded drawers, being loose over the knee, are not so easily worn through, and are more easily mended. Please, fashion makers, consider well these very important things for the sake of all poor and overworked mothers and their children. Make the fashions graceful and pretty, and teach us by precept and pattern that "simplicity is elegance!" Let us, who have the fashions to follow, hold fast that which is good—among other things, the colored winter drawers for our children.

Childrens' Brains.

I have been looking over, with interest, one of the series of American Health Primers, on "Brain Work and Overwork." One thing that interested me was, what I found incidentally about the nourishing of childrens' brains. It has long seemed to me that children are often stunted and defrauded mentally by their unhealthy ways of living. Pure air, good food, and drink, plenty of sleep and recreation, and healthy modes of mental activity, are all essential to the proper growth and development of the brain. It is sometimes the case that the child's food contains too little nourishment to supply the needs of both body and brain, and one or the other is enfeebled as the result of this deficiency. Sometimes the food supplied taxes the digestive organs so greatly as to make mental labor almost impossible, and the child is dull and slow to learn. This may be one result of munching confectionary and indulging in rich cake and pastry. I know of children who are habitually fed with rich food and confectionary, but who have such good constitutions and so active an out-door life in pure air that they contrive to grow and keep from actual sickness most of the time; but when they go to school they make very little progress, and are a constant trial to their teachers. When I hear

Fig. 7.—THE FRAME COMPLETE.

about this from the teachers, or know of the severe sicknesses that sometimes cause their removal from school, I always wish I could change their diet. If to this lack of good nourishment be added, as is often the case, habitual exposure to cold during cold weather, from lack of sufficient clothing, the case is still worse for the growing brain, as well as for the growing body. Vitality, which should be spent upon growth and repair, is unduly drawn upon to keep up the necessary warmth of the body. When the surface of the body is not kept at a proper temperature either by the atmosphere or by warm clothing, or by both, the circulation of the blood is disturbed, and nervous force or vitality is drawn from some internal organs, which are weakened thereby, and perhaps become permanently diseased in consequence. It seems to me a great piece of cruelty to send children to school poorly fed and insufficiently clothed, so that the poor body is constantly uneasy in some way and unwilling to give the brain a fair chance to do the work required. To such a child the tasks of school seem hard and distasteful, and if it is forced to do them under such conditions, it is at the expense of the health of both brain and body.

Pure air is absolutely necessary to the best conditions—pure air all of the time, night and day, indoors and out. The blood is the building material of the whole body, brain and all, and this is made of our food, good blood or poor, according to the food and drink we take, and in proportion as it is cleansed by pure air at every breath taken into the lungs. Exercise of any organ is necessary to its best development, but there is more danger, under present educational systems, of over-working the brains of children than of under-working them. Teachers sometimes sneer at this idea. "If you could see," they say, "how lazy the pupils are, how little work it is possible to get from most of them, by our best endeavors, you would see that it is the teachers who are over-worked, instead of the pupils." Yes, I do see, and I most heartily pity the teachers. The children at school seldom do an unreasonable amount of work, provided they were in any fit condition to work at all, which most of them are not. And what can the poor teachers do? Few of them are intelligent enough to know what is the matter, and, to tell the truth, many of the teachers are in the same predicament as the pupils—incapable of doing their best work because of impure air, bad food, stimulating drink, improper clothing, late hours, too little wholesome sleep, and a resulting bad condition of the improperly kept brain.

There is a deal of talk nowadays, on both sides of the ocean, about our systems of education. Everybody sees that on the whole children are not educated as we could wish. It is my belief that the parents need exhortation and reproof more than any other class. They must send their children to the school in a much better condition.

Keep the Little Folks Healthy,

and nature alone will do the work to a surprising extent. That is to say, she alone will do better work for a healthy child who has a good home than all your educational systems put together can do for a sickly child with poor home influences. Let these healthy children grow up to be healthy teachers and parents, and this muddle about education will clear itself up. Healthy children love to learn. Knowledge is the natural food of the mind, and they crave it. They do not always like to "sit on a bench and say 'A,'" but they want to know about everything, and healthy teachers and parents love to answer the questions they ask. At present it is a common thing for both teachers and pupils to be over-worked, and to have to leave school for a period of brain rest. Sometimes the breakdown is sudden, but the worst cases often come about so gradually as scarcely to seem like breakdowns until the work of exhaustion is so complete as to be almost hopeless. These cases take a long time for recovery, and sometimes entire recovery is impossible. It is a wicked thing for parents to be careless of their children's rights in this respect. When the whole of life is a school, and education is never finished, how foolish to be in haste; for here especially "haste makes waste." A tired brain should be thoroughly rested by each night's sleep and nourished by each day's food and air. If this is not the case, it becomes gradually impoverished. If this takes place while the brain is still growing, or in youth, the case is very sad. This furnishes a satisfactory explanation to the many cases that we know of early precocity and mature stupidity.

Staining the Book-Case.

Our book-case is made of plain pine. When it was made we could not afford glass doors, nor paint, nor varnish. The grain of the pine was very pretty, but it became a serious trouble to keep it clean. Now we have stained it with good success, I think; and next week I think we will add a little varnish. But I am pleased with the staining, and I will tell how it was done. I said I would do it myself, and I looked up a recipe. It said, "use tobacco," but like little Robert Reed,

"I'll never use tobacco, no!"

I haven't a kettle that I could defile by boiling up tobacco in it, so we must have something else. The painter, near, furnished a stain made of burnt umber and some mixing material. I know there was turpentine in it, and I think there was oil. I know there was before we got through with it. It seemed simply a thin paint, and as it covered up the grain of the wood (we tried it first on a pine box); I didn't like it. The painter furnished a fluid (seemingly turpentine) to thin it, but even then it failed to show the pretty grain of the pine. I wet a cloth in kerosene and rubbed off the stain, and lo! I had just what I wanted. We quickly colored our book-case, and it looks as much like black-walnut as any stained wood I ever have seen.

A Neat and Easily Made Lamp Mat.

A lady friend favors us with a sample of a paper Lamp Mat, from which the accompanying engravings are made. The construction of this household ornament is very simple. Any kind or quality of thin paper may be used; the one in question is made from an ordinary newspaper, but a more showy mat would doubtless result from using a pleasing shade of paper, or even four well chosen colors—the number of strips in the mat. A single strip is shown in fig. 1, and consists of a piece of paper, nearly a foot in length—this will depend somewhat on the size of the mat desired. Each of these strips of paper is folded smoothly so as to be of six or eight thicknesses, and as wide as one half of the required width of the smooth inner portion of the mat. The ends of the

Fig. 1. STRIP OF PAPER.

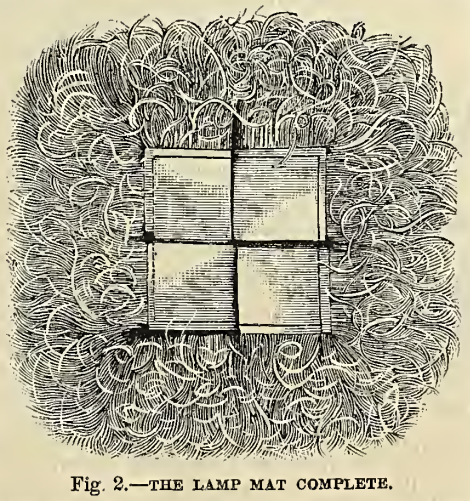


Fig. 2.—THE LAMP MAT COMPLETE.

strip are cut with scissors into uniformly fine shreds, leaving a portion in the center twice as long as wide. The four strips, thus prepared, are then placed together, in the form of a square, one end above and the other below its neighbors, and stitched in place by a fine thread. In this way the ends of the four strips make an entire border to the mat, consisting of the long fringe of the finely cut ends of the paper as shown in fig. 2. The cutting of the fringes is the hardest part, as it must be done with care that the shreds are straight and uniform in thickness. The whole work can be made in an hour, and with a slight outlay for pretty colored papers, a useful and ornamental mat can be cheaply and quickly provided for the lamp.

A Handy, Hanging Match Holder.

Our little match-holder that hangs below the oil chamber of the student lamp, is one of the appreciated conveniences of the household. In fact, we have one for each large lamp, and wherever the lamp goes, the matches are there ready to be used in lighting it. The latest comer, the neatest, and "the one for the parlor"—we use it for the sitting-room—is made with an egg-shell for the cup and is covered with worsted, and decorated as shown in the accompanying engraving. A wide range for the exercise of taste is allowed in the construction of this little convenience. The cup may be of tin or china, and the covering of Bristol board with initials, or the word MATCHES worked on—but, to our notion, this latter is not called for; in this age and country matches are known by all.

A LAMP MATCH HOLDER.

Decorations for Humble Homes.

To such as would gladly make their plain parlors a little more attractive, and whose walls must go unadorned, if they cannot manufacture ornaments themselves, the following hints will be acceptable.

STATUARY.—Doubtless some of your readers have old-fashioned Plaster of Paris mantel ornaments that a quarter of a century since were the admiration of all of the members of the family, but which, long ago, stained and faded by time, were consigned to the garret. Some of these may be converted into very pretty "bronzes" by the application of bronze shoe-dressing. Those that are gaudily painted in red, blue, and green cannot be bronzed in this manner, as the color would not be uniform. Of course, none of them will rival Rogers' Statuary in elegance, but to eyes unskilled in such matters, the deception might not be noticed, and very few would ever recognize old friends under such a guise.

A RUSTIC CORNUCOPIA.—If you are making a wall-basket as a receptacle for dried grasses, grain heads, etc., do not cover it with wall paper, but try to give it a rustic look in harmony with its contents. Cut a three-cornered piece of card-board; lap two edges and tack them together with needle and thread, making a long horn. Trim the top off with scissors, so that the back is pointed upwards and the front curves downwards three or four inches lower than the back. Cover and line it by pasting on brown wrapping-paper. Then cut strips of the same paper three-fourths of an inch wide, and fold them into what children call "cat-stairs." Tack these closely together around the horn, beginning at the curved top, being careful to preserve the same curve all the way to the point. Gradually cut the strips narrower, as they should not be more than one-fourth of an inch wide, to go on neatly at the point. Finish with a coat of varnish, and have a neat, lasting ornament for your wall. E. K. B.

BOYS & GIRLS' COLUMNS.

The Doctor's Talks.

An old negro, it has been said, replied when asked: which is of the most value to man, the sun or the moon? "Why! de moon, caise it shines ob de night!" Like the colored man many of us are apt to forget the value of blessings when they come to us regularly and silently as does the light of day from the sun. The day is day because the great orb of light and heat, situated so far away in space, makes it so. And the moon which in its fulness lights up the night does it with rays which are borrowed from the sun. Moonshine is sunshine, and may be explained in much the same way that the mischief-loving boy makes the bright sun to shine in his classmates eyes across the schoolroom, by means of a small looking glass or a bright piece of tin. The sun shines on the tin and the light is changed in its course, and can be directed this or that way by turning the tin.

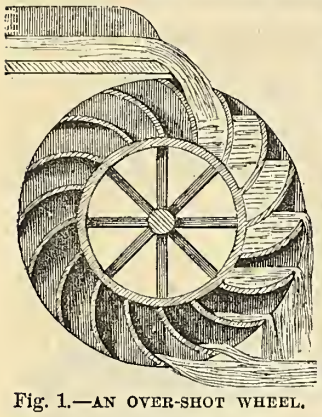


Fig. 1.—AN OVER-SHOT WHEEL.

In like manner the sun, after it has gone down out of our sight, shines on the great face of the moon, and the rays of light are changed in their course, and some of them fall upon the earth and make the pleasant moonshine or moonlight. The sun then gives us both the light by day, and the light by night. We must not therefore think any the less of the moon, because were it not in the heavens, we should have no pleasant moonlight nights. Besides giving us light and heat the sun does a great many other things; or I should say, because it gives us light and heat it is able to do much for us that may at first sight seem to have no relation to the sunshine.

THE SUN IS THE SOURCE OF OUR WATER-POWER.

But what is Water-Power? a thousand readers may ask. It is the force exerted by falling or rising water—running water is falling water. You have been told in previous *Talks* that all bodies fall because acted upon by the force called Gravitation, and from this you might conclude that water-power was due entirely to gravitation. What is water doing or trying to do when it falls? It is trying its best to get to the center of the earth, the center of the action of gravitation, and comes to rest only when it cannot get any nearer that center. But why does not all the water soon come to a state of rest? It is here that the sun comes in, it making the rain to fall and the rivers to run. The warm rays of the sun, shining on sea and land,

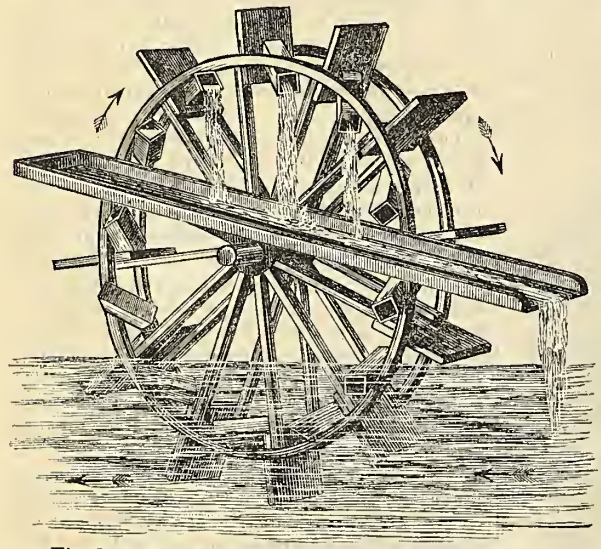


Fig. 2.—AN UNDER-SHOT WHEEL FOR RAISING WATER.

silently change the water into vapor and lift it up into the clouds, or rather lift it up and clouds are made out of it, which after a time give up the water, and it falls on hill and plain as rain. The rain fills the spring, away up on the mountain, and feeds the brook as it flows down the valley, turning here a mill, and there a factory, until it, joined by other streams, becomes a river and flows on to the ocean. The sun makes the rivers run, and the running rivers give us much of our best water-power.

SOME DIFFERENT KINDS OF WATER-WHEELS.

The power that is in falling water is applied to various uses by means of water-wheels, which are turned by the stream, and these wheels turn other wheels in the machinery of the mill or factory, and thus the grain is ground or the cloth made. These water-wheels are of various kinds, and are either those that turn "over and over" or *vertical* wheels, or *horizontal*, which turn "round and round." Of the vertical ones there are three kinds, the *over-shot* the *under-shot* and the *breast-wheel*. In the over-shot the stream of water falls into "buckets" at the top of the wheel and acts principally by the weight of the water. An over-shot wheel is shown in fig. 1, where it will be seen that one side of the wheel is made much heavier than the other by the water, and that side is constantly made to go down, when the water flows out, while fresh buckets are filled at the top and the wheel is kept in motion. In the second kind of vertical wheels the stream strikes against the boards or paddles at the bottom, and acts entirely by the force of the current. This kind of water wheel is placed directly in a running stream where the current is swift enough, otherwise a dam, and a "race way" is provided, with sufficient fall to give the required force. In figure 2 is shown an under-shot wheel, used for raising water. The running stream turns the wheel, to which a number of cups or buckets are attached, and are carried up and emptied into a trough as the wheel revolves. In the third kind, the breast-wheel, the water rushes against the side of the wheel, fig. 3, about midway between the top and bottom, and the work is done by a combined force of the flowing water and its weight when falling. The under-shot wheel is the one most commonly

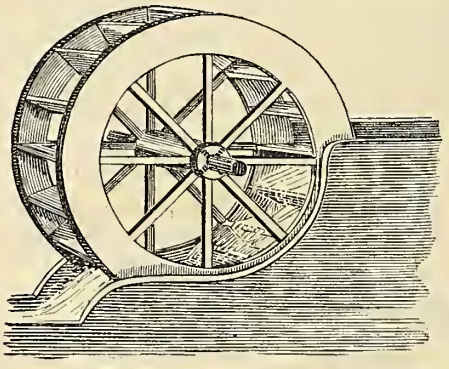


Fig. 3.—A BREAST-WHEEL.

made by children in their play in the little streams in spring time. The over-shot, for the same amount of water flowing, is the most powerful of the three. The *horizontal* or turbine wheels, those that go "round and round," must be treated at another time.

SEALS AND THEIR WAYS.

Did many of my young readers ever see any Seals? Yes, doubtless, a good many of you. The showmen sometimes have one in their travelling menagerie; and many of the larger cities, as Philadelphia with its Zoo, and Central Park in New York, have Seals, and their cousins—the Walrus, Sea Lion, etc., on exhibition. A few weeks ago the writer was out in a boat in Boston Bay—"down the Bay"—as they call it at the "Hub," and what did he see but a lot of seals! The first ones that I saw were a considerable distance away, and were upon some low rocks just above the water. With the aid of a spy-glass they could be distinctly seen, and were at play, having a real good time. Those of you who have not seen these strange-looking sea animals, will get a pretty good idea of how they look from the picture here given of one, which is very common in Greenland and the other cold regions of the Arctic Ocean. The common seal, the one I saw, when full grown, is about six feet in length, brownish on the back and yellowish below. The head is much like that of a dog, and the voice also like that of a dog—a sort of a bark. The seal can close his ears and nostrils water-tight, which it does when it dives, and remains under the water for a quarter of an hour or so. The seal has four legs, but they are odd-shaped ones, and not of much good for travelling on land. A seal on land is very awkward. They are easily tamed, are docile, and can be taught many things, as to to sit erect, bow, kiss the hand, shoulder a gun, shake hands (!), turn a hand organ, and many such other amusing things. Seals are very valuable for their skins, also for the oil which they furnish. The Esquimaux live very largely upon the seals, which they catch in great numbers in their cold, northern homes. It is told—and with good reason for believing it—that a fisherman on the coast of France acquired the knack of calling the young seals to the side of his fishing boat. "One of them so small and plump in its baby sealskin, and large woudering eyes, tempted him to steal it from its mother, and take it home to his children to raise as a household pet. In course of time the young seal was weaned from the nursing bottle and placed on a diet of young herrings. This seal became greatly attached to all members of the family, particularly the children, and would show

Fig. 4.—A GREENLAND SEAL.

great distress when not allowed to go with them in their boats. He always accompanied his master when tending the herring weirs, either swimming alongside the boat, or sitting upright on one of the seats. It would lie for hours stretched out under the kitchen stove. On warm sunny days it would swim off to the neighboring ledges of rocks, and mix with its friendly relatives, returning at evening to have a romp with the children in the water."

Our Puzzle-Box.

NUMERICAL ENIGMAS.

1. I am composed of 28 letters:
My 5, 18, 16, 11, is one of Cowper's poems.
My 17, 6, 19, 20, is a means of security.
My 26, 27, 8, 12, follows the sun.
My 5, 13, 11, 15, 20, is a fish.
My 1, 11, 21, 25, 17, 10, is a deadly conflict.
My 3, 2, 4, 14, is obtained on Broadway for five cents.
My 9, 22, 28, 23, 24, is in every blacksmith shop.
My whole is a proverb. GOODY TWO SHOES.

2. I am composed of 19 letters:
My 8, 9, 2, 10, 11, is what an elephant is.
My 3, 16, 17, 18, is a title.
My 13, 2, 17, 18, 19, are what dogs and rattlesnakes have.
My 15, 4, 1, is a sort of margin.
My 1, 7, 2, 5, is an article of food.
My 19, 6, 12, 14, sometimes kills things.
My whole is excellent advice. EDDIE G. W.

CONCEALED ANIMALS.

1. Do you admire that statue of Rogers?
2. I think that tub a trifle too small.
3. I would rather have a larger one.
4. Let me know, briefly, what you do want.
5. Jim, are all the doors locked?
6. Did you ever probe a ripe watermelon?
7. Yes, with a real sharp knife.
8. Tell the farmer to bring oats and hay.
9. Lend me your knife, Will, I only want it for a minute.
10. Jones lost a great deal of money.
11. I was able to give him a little help.
12. You always do good if you can.

METAGRAM.

Find a word of five letters, from which make ten nouns, six verbs, an adverb, and a preposition.

ANAGRAMS.

1. Second credit.
2. Give a net.
3. Decent shrews.
4. O Tom spent pen
5. Do rub seven.
6. O yes! grunt.
7. Saul got lace.
8. Sha'n't miss tape.
9. Ruin at last.
10. Dive at tunnel.

POSITIVES AND COMPARATIVES.

1. The bark of a tree; one who puts sharp points on a horse's shoe.
2. A parting visit; a great power.
3. A willow twig; to dry up.
4. To walk; to wound with a horn.
5. A disease; a place for food.
6. Exalted; to bribe.
7. Need; varnish. BESSIE.

SCATTERED SQUARE.

(*Explained in the August number, page* 318.)

O black are the clouds,
I fear it will rain;
Let us stay near the house
Till the stars shine again.

DIAMOND.

1. Found in a church.
2. A title.
3. A girl's nickname.
4. A study.
5. Uproars.
6. What we all do.
7. Part of a cherry.

XERYION.

CROSS-WORD.

My first is in laughter but not in joy,
My next is in youngster but not in boy,
My third is in letter but not in hook,
My fourth is is river but not in brook,
My fifth is in lantern but not in light,
My sixth is in scuffle but not in fight,
My seventh is in narrow but not in thin,
My eighth is in brandy but not in gin,
My ninth is in market but not in shop.
My tenth is in dandy but not in fop:
My whole is where the children love to play,
And sportive pass the merry hours away. EFFIE.

TRANSPOSITIONS.

(Fill the blanks in each sentence with the same letters transposed—*e. g.* The——began to——very strangely.—Ans. The *cat* began to *act* very strangely.)

1. She said she could not sew the carpet because there was such a——of——.
2. I heard the lamb——under the——.
3. From the fruit store she brought home——and——.
4. You had better buy articles at——with great——.
5. ——is just the opposite of——.
6. Do not go into the——if there is any——of your taking cold. The old——is out there.
7. I would not——them from earning their——.

TRANSPOSED FLOWER GARDEN.

1. Chay hint.
2. Fun cat tyd.
3. Gon ten time.
4. Haste Tym.
5. Limar dog.
6. Mohin luce.
7. Tin place.
8. Peat ewes.
9. Tom fret gone.
10. Viper Suncy.

ISOLA.

CHARADE.

No. 1. My first denotes one,
My next weighs a ton,
Third—vowel and semivowel,
Fourth—where millions dwell:
Now join these things and find the name,
Of dignitary, high in fame,
Judge, lordship, majesty or sage,
Perhaps philosopher of the age.

GALAXY.

DECAPITATIONS.

1. Behead what we find in almost every house, and leave a woman's "crown of glory;" behead the latter, and leave a daily need.
2. Behead one fish and leave two others.
3. Behead a character known in music, and leave the instrument upon which it might be played.
4. Behead a bird and leave a suitor.

ANSWERS TO PUZZLES IN THE SEPTEMBER NUMBER.

CROSS-WORD.—Hebdomadal.

ANAGRAMS.—1. Biographical. 2. Bricklayers. 3. Diamonds. 4. Archdeacon. 5. Vouchsafed. 6. Enumerate. 7. Imperialist. 8. Benignant. 9. Undertaking. 10. Unanswerable

TRANSITIONS.—1. June: dune, done, dole, doll, dull, duly, July. 2. Two: too, ton, son, sin, six. 3. Came: cane, wane, want, went. 4. Mine: fine, find, fond, bond. 5. Pool: poll, toll, tall, tale, take, lake. 6. Book: hook, hoot, soot, slot, slat, slay, play.

POSITIVES AND COMPARATIVES.—1. Halve, Havre. 2. Tape, taper. 3. Ye, year. 4. Rap, wrapper. 5. Pill, pillar. 6. Great, grater.

DECAPITATIONS.—Gone, one. 2. Gasp, asp. 3. Meat, eat.

NUMERICAL ENIGMA.—Consider well, then decide positively.

DOUBLE ACROSTIC.
Ivanhoe—Marmion.
I— dio —M
V— est —A
A— ste —R
N— y —M
H— ayt —I
O— li —O
E—nslg —N

CHARADES.—1. Castanet. 2. Subordinate.

PICTORIAL ANAGRAM PROVERB.—"Two of a trade can never agree." Items: One, tea, rat, grave, deer, fan, and cow.

The Doctor's Correspondence.

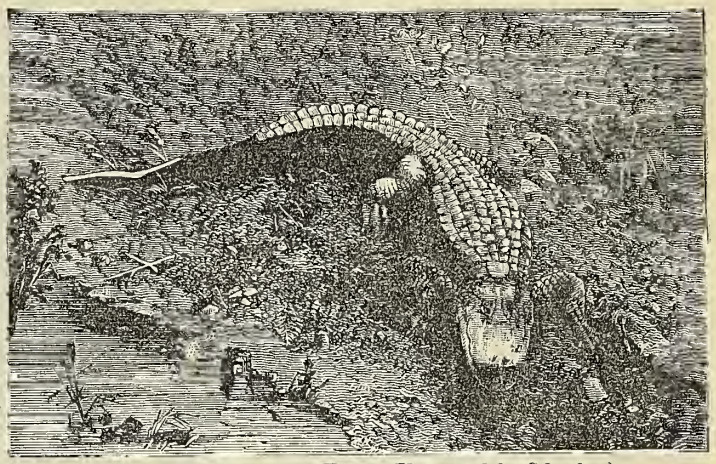
"A CANARY BIRD CHANGED INTO A SNAKE."

A correspondent, "G. W. R.," writes under the above startling heading that: "A few days ago, a family in Nicholas County, Ky., returned to their house after some hours absence, found a snake in the cage where they had left a canary. It had crept into the cage, dined on canary 'au naturel,' and was unable to retreat between the wires. This individual could not lay claim to the common wisdom of serpents. It was called a *house* snake. That fine meal was its last."

INSECT EAT INSECT.

Yesterday's mail brought us a little wooden box, in which there was the remains of a large, green "worm" (Tomato-worm), having what looked to be a lot of small white eggs all over its back. It was these "eggs," doubtless, that led the boy, large or small (men are boys of a larger growth) to send the worm. It is not the first time that this same kind of worm and its "eggs" has been brought to my notice. Recently a man came to me out of his tomato patch with one in his hand, and a question as to the "eggs." The last time I called at the family drug store, the clerk showed me "a great curiosity." It was a "great, green worm, with its eggs all over its back." The man of pills and powders had gone farther than some of the others, in stating that the white, oval bodies, which stood on end over the upper surface of the Tomato-worm were the eggs of the worm that was bearing them. The engraving here given shows the worm with its curious load. In the first place: Can the white "eggs" be those of the "worm?" The story of the changes through which many insects pass in their growth has been frequently told, but it will bear a brief statement here. In the growth of the Tomato-worm, for example, there is the egg which hatches into the *larva*, or "worm" state. From the larva state the insect passes into the *pupa*, where, unlike the "worm," it is inactive, and does not eat. Out of the pupa, the mature, or perfect insect develops, and in the case of the Tomato-worm it is a beautiful moth. It is the perfect insect, or last stage from the egg, that lays the eggs, and the circle is completed. It is thus plain that the green "worm" did not lay the "eggs" which it carries on its back. But where did they come from? All insects do not live on plants; some, yes, many live on animals, and some make their home within the bodies of other insects. Our enemy, the Tomato-worm, has its insect enemies. A minute, fly-like insect, with a sharp probe, pushes a number of its eggs into the caterpillar's body when it is quite young. These eggs hatch, and the *larvæ* from them feed upon the substance of the Tomato-worm. This may be one reason why the Tomato-worm ate so much of the Tomato vines, he having so many mouths to feed. When these little "worms" of the fly were ready to go into their *pupa*, or resting state, they made their way to the surface and spun, each for itself, a pretty white oval cocoon, which was fastened by one end to the back of the Tomato-worm. Doubtless, in many cases, the infesting worms kill the large green ones upon which they feed, and are thus beneficial, our friends—because enemies to one of our enemies.

Illustrated Rebus No. 480.—A piece of good news to many, concerning a character in the Bible.



A YOUNG ALLIGATOR.—(*From a Photograph by Schreiber.*)

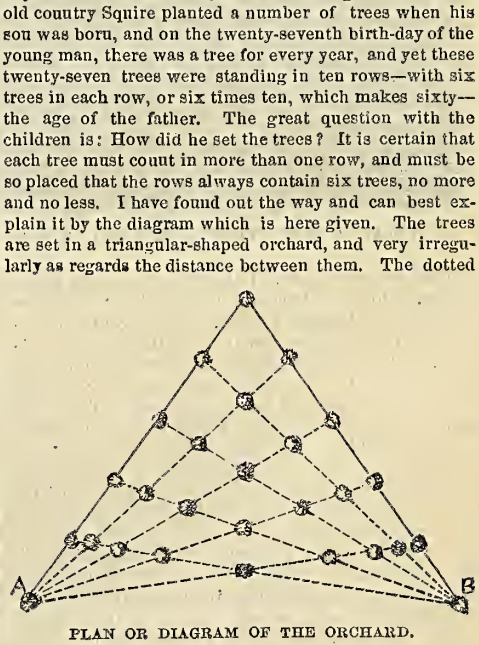
THE TOMATO-WORM—WITH "EGGS."

Alligators and Their Ways.

Worcester's Dictionary says: "The Alligator of North America is a formidable and ferocious creature, prodigiously strong, and sometimes attaining the length of eighteen feet." What a list of long words to tell us what the Alligator is! But as long words are in order, let us give the scientific name of this formidable, ferocious and prodigious animal, which is, *Alligator Mississippiensis*. (The name has i's (eyes) enough for three alligators). From the long tail end of the name it might be supposed that this animal had something to do with the Mississippi River, and such is the case; its muddy banks and sluggish waters are its native haunts. One of the leading features of the alligator is its mouth, it being very large, extending far behind the eyes, and furnished in each jaw with a single row of teeth, all of different sizes, standing apart from each other. The mouth is evidently made for taking food, and that in large pieces. The alligator has long enjoyed the reputation of having a good appetite, and, when full grown and pretty hungry, will not object to a man for a meal. Some one has remarked that the alligator has a very "open countenance," and from what we have seen of them we are of the same opinion. After the head comes the long tail—with a body on four short legs between—and is the part which is the most used when swimming. For travelling on land, the heavy tail is of little or no use, and had better be off; but then, it is handy as a weapon of defence in times of danger. Alligators take no food in the winter, and this may account in part for their great appetite during summer. While going without food they bury themselves in the mud of the river. In the spring the alligator lays fifty to sixty eggs, about the size of those of the goose, which they cover with sand, and leave to hatch by the heat of the sun, though the mother does not go far away. When the young alligators come from the shell they are about six inches long; and, like ducks, take at once to the water. Little alligators are frequently caught and kept as pets. The engraving above was made from a photograph of one thus employed. He stood very well to have his picture taken. Persons who go South to spend the winter frequently bring a young alligator with them on their return in the spring, and it is not an uncommon thing to find one or more, from two to three feet in length, sporting in the water tank of a gentleman's plant house, or even basking on the sunny slope of a pond in the garden. While young they are harmless, and covered as they are with shiny plates or scales, are interesting animals; perhaps doubly so, when one knows the hideous aspect, disgusting habits, abominable smell, etc., of the full grown ones in the wild state. There are instances on record where these "pets" have escaped from their confinement and turned up in places least looked for, and at times when they were not expected; in fact, have done harm by biting infants and children. An alligator that has reached any great age is not to be trusted. A safe alligator is a dead one, and we do not care much for them even then. It is told for a truth that in some parts of the South, in the home of the alligator, they hunt them, using young negroes for bait. The colored lad is sent into the water, and when the "formidable, ferocious creature, prodigiously strong," takes after him, he (the alligator, not the boy) is shot in the eye by a bullet, by a marksman concealed in the bushes on the bank. For our part we do not envy the lad—attractive as he may be to the alligators upon his track.

A Strange Way to Set Out an Orchard.

The boys and girls are constantly asking me to answer all sorts of questions. The last one is that which relates to the strange way in which the trees were set in an orchard. I do not know whether they were apple, or pear, or cherry trees, as far as that goes it does not make any difference. The story runs something like this: An old country Squire planted a number of trees when his son was born, and on the twenty-seventh birth-day of the young man, there was a tree for every year, and yet these twenty-seven trees were standing in ten rows—with six trees in each row, or six times ten, which makes sixty—the age of the father. The great question with the children is: How did he set the trees? It is certain that each tree must count in more than one row, and must be so placed that the rows always contain six trees, no more and no less. I have found out the way and can best explain it by the diagram which is here given. The trees are set in a triangular-shaped orchard, and very irregularly as regards the distance between them. The dotted



PLAN OR DIAGRAM OF THE ORCHARD.

lines show the rows, five of which run out from *A*, and the same number in like manner from the corner *B*. No further explanation is needed than that which the diagram gives. It can not be recommended as an economical method of setting an orchard; but if, like the Squire, you have only twenty-seven trees, and want ten rows, with six in a row, there is no other way to set them, as far as I know to make the strange orchard. U. H.

A Lantern to Light His Way.

There is something frank and generous in the very appearance of large, well-formed, deep-colored, matured pumpkins. They have not the delicate bloom upon their cheeks that we find on the peach; they do not hang in graceful clusters, as do the sweet and juicy grapes, but they have an important place to fill in the list of farmer's fruits. Though coarse and unpleasant to the taste when "eaten from the vines" (?) the pumpkin is not beneath the notice of the boys of the country. Plant no pumpkin seeds, and let no vines run among the corn, and you surely take from the country youth a source of autumn pleasure that nothing else can replace. It hardly need be said that I now refer to the "Pumpkin Lantern," or "Jack-Lantern," as it is frequently called. What boy of any considerable size has not seen one of these truly mirth-provoking things! Yes! What boy has not found himself watching, day by day, some early pumpkin which he has in some way marked for his own—and a little later has made his jack-knife do its artistic work in chiselling out the astonishing mouth with its double row of notches! Who has not rimmed and gouged away at the irregular eyes—and by removing a three-cornered piece of the "shell," made the organ of smell? What boy has not had desperate failures in trying to make a fine, noble-looking face, or perhaps has more frequently tried to imitate rather the countenance of some person whom he has seen, and thought peculiar in some part of the face. A crooked nose is often exaggerated, and if the mouth is large, or small, it can be easily made larger or smaller.

I do not remember the first time I made a "Jack-Lantern," and I have no recollection of what became of it after it was made; it probably was a sorry imitation of some human face and the pumpkin was doubtless a small, green one, as such can be easier cut, and earlier in the season. Whatever the first one may have been, I remember one that "we boys"—it was a partnership concern—made when I was old enough to own and handle a good jack-knife with some dexterity. George and I—whom you may remember went after the squirrels and fell asleep in the woods—were the architects of the "Lantern" in question. It was made from the best pumpkin that a ten-acre field of corn could afford—it was not the largest, as that would have been too big, and we could not have handled it so well—but was of fine shape and had a smooth skin and a thick rind that made it valuable. It was made with no great care, only that the face was to be, as we called it, "outlandish." We wanted it to be "the worst-looking 'Lantern' that you ever saw." Well, I guess we succeeded, and when the candle was put in and lighted, its face, though radiant with a "warmth of expression," as artists might say, in beauty it was far inferior to that of a wax doll. We had often made "Lanterns" before, and had frequently shown them unexpectedly to each other, and made them call on the older members of the household, just when they did not expect a visitor at the door—or suddenly let the bright-eyed, great-mouthed monster glance in at the open window when all else was darkness within and without.

Now, we did not have any dislike to neighbor Morgan's oldest boy; he was "one of us" on many a play day; but as things were arranged, he knew nothing of the "Jack-Lantern" which George and I had made. The Morgan boy attended school at the village academy—we didn't—and went to and from home on horseback. We knew about the time he returned, and the thought struck us—I do not recollect which was struck first—that it would be a good thing for the Morgan boy, to stir him and his horse up a little, as he (the boy) was altogether too slow on his way home, thus avoiding some chores that would otherwise naturally fall to him. The "Lantern" was too heavy for us to hold in our hands, so we found an old barrel near by, which we placed upon the roadside—it was already dusk—and rested the "Jack" upon it, with its face toward the fence, and blindfolded with a cloth. Soon after the candle had got to burning nicely, and the darkness had settled upon all things, we heard the slow footsteps of the Morgan horse. How funny we all felt behind that barrel, almost holding our breaths and fearing it might be some one else, that we would not care to see, or have see us. But everything was well for us, and shortly the boy, thoughtless of surrounding preparations for him, and possibly deep in some algebraic problem, and the lazy horse, reached the point opposite us. George wished to turn the "Lantern" upon him just before he got to us, but that would not have done, as the horse, slow and lazy as he was, might have wheeled and thrown the young rider. All we wished to do was to speed him on his homeward way. We threw off the blindfold, and gave the pumpkin a half turn, and—and—I do not think we shouted, but it may be we did, but the Morgan boy had something to say, and as for the horse—he was busy with his legs, and more so than he had been for many a day. The surprise was not great enough to frighten the boy off of his horse, as it might have done, and we are glad it did not; but it gave new life to the burden-bearing animal that did not die out until the rider was carried to the horse's stable door. I picked up the fallen hat, and trotted on far behind, and took it to its owner; it giving me an opportunity to tell him that nothing mean was intended—only a little fun—just wanted to light him home, as it were, for the night was a dark one. The Morgan boy was invited to our house on the next Saturday, and we all hands talked the matter over, and came to the conclusion that it might have been much worse. Revolving lights along the sea coast are now frequently used to keep vessels from running into danger; but a revolving "Jack-Lantern"—one that turns upon a barrel head, in the hands of mischivous boys, even though they are all in fun, when used to light up a safe place in a common road, may in itself be the source of anything than safety. Having had the experience, I give it, with the accompanying engraving, sketched from memory, not to encourage the young readers to do the same, but rather to show them in a pleasant way, at least one thing that had better be left undone. UNCLE HAL.

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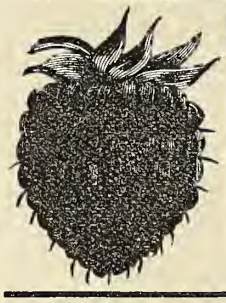

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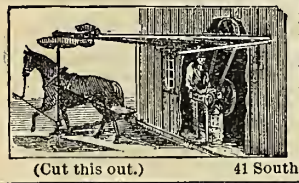

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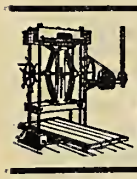

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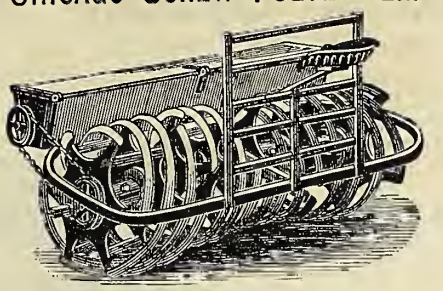

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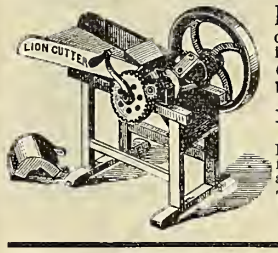

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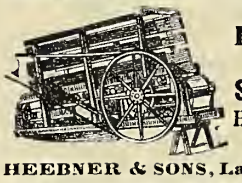

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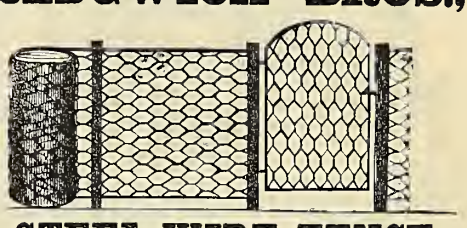

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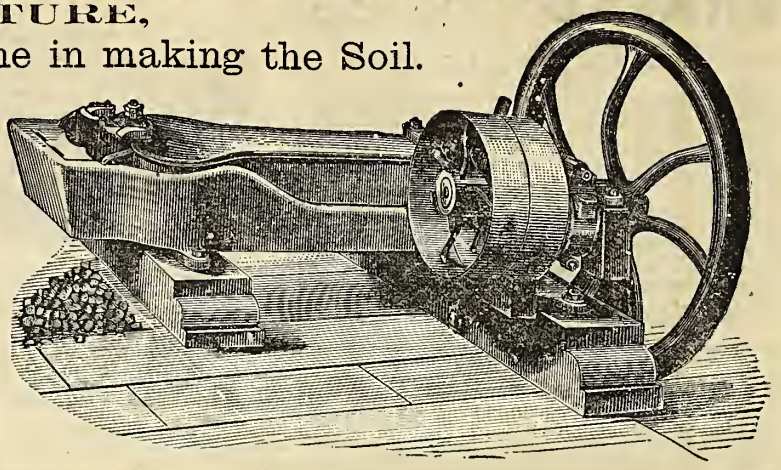

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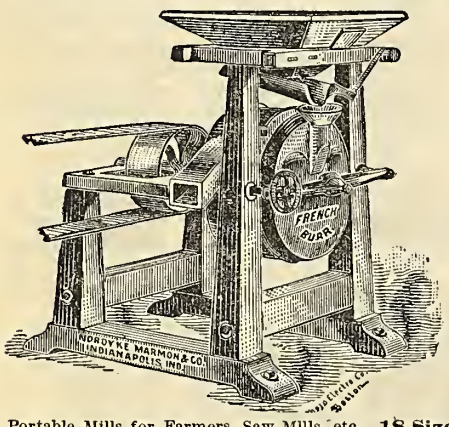

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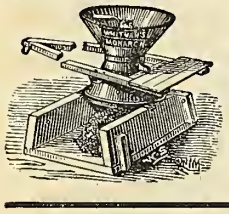

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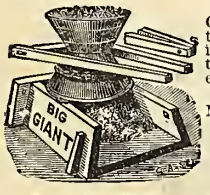

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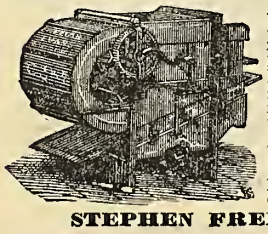

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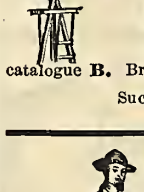

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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from Page 459.

In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations are seldom repeated, as those who desire information on a particular subject can cheaply obtain one or more of the back numbers containing what is wanted.

Back numbers of the "American Agriculturist," containing articles referred to in the "Basket" or elsewhere, can always be supplied and sent post-paid for 15 cts. each, or $1.50 per volume.

The German Edition.—All the principal articles and engravings that appear in the *American Agriculturist* are reproduced in the German Edition. Besides these, there is a special department, edited by an eminent German cultivator. Our friends can do us a good service by calling the attention of their German neighbors and friends to the fact that they can have the paper in their own language, and those who employ Germans will find this Journal a most useful and acceptable present.

Bound Copies of volume 38, and of every previous volume back to Vol. XVI. (1857), neatly bound, with gilt backs, Index, etc., are supplied at $2 each (or $2.30 if to be sent by mail). See Publishers' Notes, 2d cover page.

Clubs can at any time be increased by remitting for each addition, the price paid by the original members; or a small club may be made a larger one at reduced rates, thus: One having sent 6 subscribers and $7, may afterwards send 4 names more and $3, making 10 subscribers for $10.00; and so for the various other club rates.

Terms to New South Wales, New Zealand, Australia, Africa, etc.—To several inquirers. Under the latest revision of the Postal Union Regulations the price of the *American Agriculturist* (either English or German edition), including postage *prepaid* through, will be covered by 7 shillings sterling per annum. This applies to the above countries, and to all others embraced in the General Postal Union. The simplest mode of remittance is by Postal Money Orders, payable in London, to the order of Orange Judd Company. These can be readily cashed in N. Y. City at a slight discount, which the publishers will cheerfully pay. For Club rates, (postage included), see our second cover page, and reckon 22 cents to the shilling sterling.

Rust in Celery.—The celery growers of France have united in the offer of a prize of $2,000 for the purpose of encouraging investigation into the nature of the celery-rust, and the discovery of a remedy.

Grass Seed Sowing.—"C. M. H.," Grayson County, Va., asks: "Which would you prefer to do, sow grass seed with winter wheat, spring oats, or buckwheat July 1st?"—Why didn't you add, 'or with turnips August 1st?'—We answer with the crops in the following order: Turnips, wheat, oats, and buckwheat, having never seen grass do well sown with buckwheat if this made a good stand. We would rather sow the grass seed on buckwheat stubble, first harrowing it thoroughly.

Wind Mills.—"R. S. K." The wind mill should be placed in an exposed situation, away from trees and buildings, so that it can get all the wind possible. If small it can be mounted on the barn, as is now frequently done; but it is better to have it stand by itself, and should be as near the well or spring as is convenient.

Alfalfa, or Lucern in California.—"S. C. H.," Downey City, California, writes that Alfalfa can be grown in his region at less expense than any other fodder crop. He says: "Once sown on deeply cultivated land, free from weeds, it is good for ten years, or even more, with us. Twenty pounds is abundant seed for an acre—some think more—but it should be sown thickly. Let it stand thick and it is finer, and more tender.....From seven to nine cuttings can be obtained from it, and from fifteen to twenty tons of cured hay a year made to the acre.... This hay must be cured as rapidly as possible, raked in windrows, and bunched the second day, rather letting it cure in bunches than in any other manner, to prevent the leaves falling off; then housing or "shedding" it soon as possible, sprinkling salt through it, to prevent mould.

"Tumble Bugs."—A subscriber asks if there is any animal that will destroy the common beetle, known as the "Tumble Bug."—The detested skunk lives upon beetles and other insects, when he can get enough, and is a most faithful seeker after, and destroyer of, them. Whether he delights in the peculiar, and, to us, unattractive flavor of this beetle, or eschews the same, we cannot tell.

English and American Implements.—The English manufacturer makes his implements heavy, without much regard to the strength needed. Their forks, whether for spading, or hay, or manure forks, are much too heavy, and are most unwieldy, as compared with the neatly shaped, lightly built, and easily handled American forks.—The English plow is usually three times as heavy as ours, twice as long, and much less easily handled. The cradles they use in cutting their grain would not be used by one of our reapers, and so with many other of their heavy farm implements.

Hillside Garden.—"T. B. B." writes: "I have a garden on a hillside, on a slope of about 15 to 20 degrees. It has been worked only this summer. How can I best place it in condition for next year's gardening? It is a lot of about 4 by 8 rods. I thought of plowing it this fall, and manuring it heavily before plowing. Would it be best to manure this fall and plow under, or manure next spring; it is a rather hard, clayish soil?"—It might do to spread the manure and then plow the ground in ridges running up and down the hill, but it would probably be better to ridge the land with a plow or spade, and then sow on a pretty liberal dressing of lime, slaked with old brine, whitening the whole surface. This will act during the winter, and the manure may be applied in the spring after "splitting" the ridges, when the manure can be turned under with a sidehill plow.

Plant Lice or Aphides.—The number of Plant Lice possible to be produced from a single individual during a season is very great. The following is a table prepared by M. Foujard to illustrate this point:

Generation, or brood.—Produce.
1st, 1 Aphis,
2nd, 100 Aphides,
3d, 10.000 Aphides,
4th, 1,000,000 Aphides,
5th, 100,000,000 Aphides,
6th, 10,000,000.000 Aphides,
7th, 1.000,000.000,000 Aphides,
8th, 100.000,000,000,000 Aphides,
9th, 10,000,000,000.000,000 Aphides,
10th, 1,000,000,000,000,000,000 Aphides,

Or one quintillion in a single season. Mr. Huxley calculates if a louse weighs one-thousanth of a grain "the tenth brood alone would, if all its members survive the perils to which they are exposed, contain more substance than five hundred million stout men, to say the least, more than the population of China." The fact that there is no such appalling production of the Aphides is an illustration of the fact that there is a great struggle for existence which this vast productive power is designed to meet in the case of these small insects.

Horseback Riding.—Fifty or a hundred years ago the saddle was quite sure to be found in the farmer's barn, as one of the necessary articles of the farm—but now it is too much put one side for the harness and buggy. At this season of the year, when the roads are bad, the saddle should be more generally used, on the ground of both economy and comfort. Boys, and girls too, should learn the art of horseback riding; as far as possible every farmer should have a horse suited to the saddle.

To Catch Red Ants.—"Mrs. F. E. M.," Monmouth Co., N. J. A number of persons who have tried it, inform us that a plate covered with a thin coat of lard, or other grease, will attract and catch the ants, from which they can be wiped with a cloth, and a new coating of lard put on, and the trap is set again for the pests.

Pedigree in Seeds.—A thorough-bred animal—one that is registered in the herd book and has therefore a pedigree—is the result of a series of generations of careful breeding. Such an animal has had certain characteristics fixed by the process of selection, and possesses the power of transmitting those characteristics, just in proportion to the purity of the breeding and the time it has been carried on. An intelligent breeder of live stock looks as much to the history of an animal as to the animal itself, and is satisfied only when both accord with his ideas of good points, and those brought out in a way that makes them hereditary. When we come to plants, the same laws hold with equal force and importance, but a pedigree is rarely insisted upon in the selection and purchase of seeds. If the wheat is plump and the corn is full and bright, that is sufficient, and questions are seldom asked as to the method by which the plumpness or brightness has been obtained. Consider what a host of new varieties of seeds are thrown upon the market every year, which are never heard of after their first sowing, because they are not the results of close breeding, and therefore have not the property of transmitting the qualities peculiar to them. Pure seed should mean that which has resulted from the in-breeding of a variety, for a sufficient length of time, so that the qualities have become fixed, and will be perpetuated. There is a wide field for seed breeding, and in it our grains and grasses may be greatly improved. A "Herd Book of Blooded Corns" sounds very strange, but may it not be that a pedigree of a "Dent," or an "Evergreen," can be established and the history of it stated by *sires* and *dams*, in much the same way as these terms are used in a herd book of Jerseys?

Fair Tests for Draft-Horses.—A horse should be at his best when in the harness; it is there that he does the greater part of his work, and it is of prime importance that trials in the harness be more frequently made at our fairs. Thousands of breeding stallions are never broken to harness, and if so, are never taught to handle themselves properly with a heavy load. A spirited horse out of the harness does not always mean one that will stand the test of hard work. Breeders of draft horses very generally make their selections entirely by sight, and not from results of trials of strength and endurance. It is our belief, that much more stress should be put on the action of the animal when at work; and any system of testing the horse in the harness, with a heavy load, will lead to an improvement in draft horses.

The Union Stock Yards at Chicago are the most extensive of any in America, if not in the whole world. In a recent visit the writer found much to interest and instruct, and a little that was amusing. The ease, rapidity, neatness, and we may add humaneness, with which the work was done, made us quite in love with wholesale slaughter. The yards occupy 350 acres, and will accommodate 10,000 cattle, 120,000 hogs, and a larger number of sheep and horses. Fifteen hundred car loads of stock can be unloaded, put in pens, fed and cared for in a single day. Those who have not visited the Union Stock Yards, and have an opportunity, should not fail to improve it, and see the work done.

Beech and Chestnut Timber.—"A. P. P.," of Long Island, is about to cut some 40 or 50 acres of timber, consisting of Chestnut and Beech, which have stood for 35 or 40 years, and wishes to devote the ground to the culture of the same kind of trees. He asks, "shall I wait for a spontaneous growth or plant seed? Some of my neighbors say that soft woods only spring up, such as Birch and Pine. How far should the young trees be left apart."—Beech and Chestnut trees are so dissimilar that they are usually not planted or suffered to grow together. The beech is best propagated from seed, the chestnuts spring up readily from the old stumps. The usual plan is to trust to this vitality of the old chestnut roots to establish the new stand, but with beech it is usual to wait for a fall mast, then to scarify the soil under the trees, so that the nuts shall find a soft seed bed—and when the new crop is fairly sprouted, to cut off most of the wood, leaving some trees standing for shade and protection. The young growth is supposed to grow at first very thick—then it should be thinned out for hoop poles, afterwards for charcoal, and finally for scaffolding poles, fencing stuff, or firewood, while the remainder stands for timber.

Barrenness in Cow.—Mr. "T. H. C.," Wilkesbarre, Mass.—The only advice we can give you in the case of your cow, is to convert her into beef as soon as possible: there is no known remedy for confirmed barrenness, and the best course in such cases is to get a cow that will be useful, and not try experiments that are most likely to fail. Of course, if the cow has been sold under false representations, you have a legal remedy.

The Queens Co. Show lost much of its interest this year on account of the reported prevalence of Pleuropneumonia in the county. The farmers, from their long acquaintance with the disease, have a wholesome dread of it. It is only those who know nothing of it, and who in their selfishness and ignorance fortify themselves in a disbelief of its dangerous character, who brave it and repeal laws for its control like the farmers and legislature of New Jersey. Other departments of the show were of usual interest, and with fair weather there was good attendance.

Oyster Shells for Poultry.—"T. B." Certainly, roast the shells before pounding them up. A little nutritive matter is doubtless lost, but the saving of time is of much greater value than the loss from burning.

Seedling Black Walnuts.—Wm. Armstrong, of Wisconsin, writes:—"Last fall I procured three bushels of black walnuts from the neighboring forest, and after leaving them in a dry place until the shucks had become quite dry, I placed them in a couple of barrels; alternately a layer of nuts and then a layer of damp sand; the sand must be kept moderately damp during the winter. During the January thaw I planted them, some in a permanent place by the road side, and others in the nursery, and they have nearly all grown successfully, some of them to the hight of two feet. I would like to know if I could transplant those in the nursery successfully this fall. They will make a splendid wind-brake in course of time, to say nothing of their great usefulness in cabinet work. As I go into the forest I admire those stately trees planted there by the hand of nature, and wish I could protect them from the ravaging hand of man. I return and look upon those that I have recently planted, and think what a little effort it cost me, and what a world of pleasure for those who may come after to enjoy their shade and admire their stately form."—Forest trees which send down long and strong tap roots, as do walnuts, hickories, oaks, etc., should have the tap root cut off, without lifting the plant, at the close of the first season. In the early spring it may be lifted and set out again at once after trimming the roots a little. The next autumn the plant may be moved with safety.

"The Best."—Letters are constantly coming in asking for *the best* kind of sheep, the best fastening for cows, the best churn, the best feed cutter, etc., etc. In many cases there is *no* "*the best*" thing, but generally a number equally good. It is much a matter of taste which is the best for a given individual. Shall we say that this or that reaper is the best when there are many all so near perfection that the judges disagree? It will be a long time before *the best* in many cases will be settled beyond a doubt. While there is doubt, situated as we are, it is *the best* for us to keep still. To give an opinion is one thing, but to decide out and out is another.

The Sweet Potato.—But a few years ago it was thought that the sweet potato could not be grown north of Virginia, but it is now a profitable crop in many Northern and Western States, and instead of being a luxury, is within the reach of almost every family. The Jersey sweet potato is now much esteemed, but it is not as highly colored—not as yellow—or as rich in flavor as those which come to us from further regions south.

"Fire-Fanging."—"C. M. H.," asks: "How may we know by its appearance when manure is over heating in fermentation—'fire-fanging' as it is called?"—Watch it.

Carriage Gate.—We have several inquiries for *the best* carriage gate that can be opened and shut without leaving the vehicle. Good ones in use ought to be advertised; we do not know which is the best.

American Beef in England.—The "Privy Council" of Great Britain, as we understand their powers, are a body of gentlemen acting under the direct authority of the Queen in regard to matters which are not provided for by law, and which require immediate action. Their decisions are usually liberal and just, and their action in regard to the slaughter of American beasts 14 days after landing, though it is certainly arbitrary, and damaging both to our interests and to those of many citizens of Great Britain, may yet be of great service to us. Judge Jones, of Ohio, in a letter to the President, dated Liverpool, August 4th, after explaining the effects of this requirement, says: "The short argument of the advocates of compulsory slaughter is this—*Pleuro Pneumonia* is known to exist in the United States, and the Government has adopted no measures for its extirpation or even to determine the localities where it prevails." Of course they must regard the whole country as infected. We cannot say a word. A good bill was introduced in Congress last winter, and though strong efforts were made to carry it through, it failed. Now the Treasury Department contents itself with what it regards as retaliatory action in subjecting all neat cattle from Great Britain, though coming with a clean bill of health, to a quarantine of 90 days. This does not punish either the Privy Council or the English people, but our own importers of choice stock. It does no good, and importations of neat cattle have almost entirely ceased. Judge Jones urges the appointment by the Treasury Department, of a gentleman of character, to prescribe regulations for the conveyance of healthy beef cattle through infected districts to the ports of shipment, and to send such with a clean bill of health. When this is done he thinks American beef will be permitted to be landed and fed a while before slaughtering. We need something like the Privy Council in this country, to act in cases of emergency, when Congress fails, and when the interests of the country suffer from neglect. It would seem as if the President and Cabinet might be depended upon to act in exactly such cases as this, but they do not, and one of the most important industries of the country languishes. We are much obliged to the Hon. T. C. Jones for writing and to Mr. Hayes for publishing his letter, and sending the *American Agriculturist* a copy.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our record kept daily during the year, show at a glance the transactions *for the month ending Oct. 9th*, 1880, and for the corresponding period last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 d's *this* m'th	507,000	6,997,000	6,304,000	212,000	473,000	1,533,000
26 d's *last* m'th	491,000	7,840,000	4,661,000	316,000	——	1,181,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 d. *t's* m'h	539,000	31,016,000*	14,948,000*	259,000	285,000	3,109,000*
26 d. *l't* m'th	436,000	28,214,000*	15,930,000*	212,000	——	2,406,000*

* Including forward delivery.

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 days 1880..	507,000	6,997,000	6,304,000	212,000	473,000	1,533,000
28 days 1879..	561,500	9,104,000	7,043,000	582,000	497,000	1,146,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 days 1880..	539,000	31,016,000	14,948,000	259,000	285,300	3,109,000
28 days 1879..	607,000	21,156,000	10,265,000	851,000	152,000	2,087,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
Oct. 7, '80..	2,228,321	3,272,024	55,431	19,324	449,202	134,850
Sept. 7, '80..	2,636,742	2,326,245	65,612	15,471	76,976	174,033
Aug. 10, '80..	3,046,607	1,784,441	46,004	25,283	78,910	202,553
Oct. 8, '79..	2,137,893	1,672,136	27,312	31,211	578,056	207,729

4. *Exports from New York, Jan. 1 to Oct. 7.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
'80.	2,867,000	49,320,000	39,814,000	1,501,000	257,000	405,000	149,000
'79.	2,621,000	51,473,000	28,815,000	3,504,000	131,000	501,0 0	281,000
'78.	1,892,300	41,971,060	22,847,400	3,421,550	1,516,200	2,980,300	315,200
'77.	1,105,200	10,662,600	19,982,250	1,632,300	803,250	157,000	190,800
'76.	1,517,090	20,121 369	14,245,477	816,474	39,362	460,481	470,830
'75.	1,442,211	20,631,499	10,760,680	154,510	225	104,323	240,882

CURRENT WHOLESALE PRICES.

	Sept. 9.	Oct. 9.
FLOUR—Super to Extra State	$3 25 @ 4 15	$3 50 @ 4 40
" Super to Extra South'n	3 25 @ 6 25	3 50 @ 6 50
" Extra Genesee..........	4 25 @ 5 75	4 40 @ 5 90
" Superfine Western......	3 25 @ 4 00	3 50 @ 4 10
" Extra Western..........	3 75 @ 8 25	4 00 @ 8 50
" " Minnesota........	3 85 @ 8 25	4 00 @ 8 75
RYE FLOUR, Superfine.......	4 40 @ 5 00	4 50 @ 5 00
CORN-MEAL..................	2 50 @ 3 25	2 50 @ 3 30
CORN-FLOUR, ₩ bbl..........	2 85 @ 3 85	3 00 @ 4 00
OAT-MEAL, ₩ bbl............	4 50 @ 6 50	4 75 @ 6 50
BUCKWHEAT FLOUR, ₩ 100 lbs	— @ —	2 25 @ 2 50
WHEAT—All kinds of White.	95 @ 1 08½	1 00 @ 1 17
" Red and Amber.......	90 @ 1 08	1 00 @ 1 17
" Spring...............	90 @ 1 02½	1 00 @ 1 16½
CORN—Yellow................	52 @ 61	52¾@ 67
" White..................	51½@ 55	54 @ 55
" Mixed..................	50½@ 51½	52½@ 53¾
OATS........................	37 @ 45	38 @ 45
RYE..........................	86 @ 89	97 @ 99
BARLEY......................	75 @ 95	70 @ 95
HAY—Bale, ₩ 100 lbs.........	70 @ 1 05	70 @ 1 10
STRAW, ₩ 100 lbs............	50 @ 85	55 @ 90
COTTON—Middlings, ₩ lb	11¾@ 11⅞	11⅛@ 11½
HOPS—Crop of 1880, ₩ lb.....	21 @ 40	20 @ 28
" old, ₩ lb.................	4 @ 14	4 @ 25
FEATHERS—Live Geese, ₩ lb	40 @ 50	47½@ 50
SEED—Clover, W. & St. ₩ lb.	8¼@ 8¾	8¼@ 8¾
" Timothy, ₩ hushel....	2 30 @ 2 35	2 35 @ 2 50
" Flax, ₩ busbel.........	1 30 @ 1 35	1 35 @ 1 40
TOBACCO, Kentucky, &c., ₩ lb	4 @ 15	4 @ 15
" Seed Leaf, ₩ lb.....	5½@ 50	5½@ 50
WOOL—Domestic Fleece, ₩ lb	20 @ 48	18 @ 48
" Domestic, pulled.......	20 @ 46	18 @ 45
" California.............	15 @ 35	15 @ 35
TALLOW, ₩ lb................	6⅜@ 6½	6⅜@ 6½
OIL-CAKE—₩ ton............	29 00 @29 50	30 00 @ —
PORK—Mess, ₩ bbl...........	— @ 16 00	16 00 @ —
" Extra Prime, ₩ bbl..	12 00 @12 50	12 00 @12 50
BEEF—Extra Mess............	10 00 @10 50	10 00 @10 50
LARD, In trcs. & bbls, ₩ 100 lb	8 25 @ 8 70	8 45 @ 9 10
BUTTER—State, ₩ lb.........	17 @ 28	21 @ 32
" Western, poor to f'cy, lb	16 @ 28	16 @ 32
CHEESE......................	9 @ 12¾	8½@ 13¼
EGGS—Fresh, ₩ dozen.......	16½@ 19½	20 @ 23½
POULTRY—Fowls, ₩ lb.......	11 @ 15	10 @ 15
" Chickens, ₩ ₩..........	11 @ 18	10 @ 16
" Roosters, ₩ ½..........	5 @ 8	4 @ 8
" Turkeys, ₩ lb..........	12 @ 16	8 @ 11
" Geese, ₩ pair..........	1 12½@ 1 62½	1 00 @ 1 62½
" Ducks, ₩ pair..........	40 @ 75	40 @ 75
" " ₩ lb............	10 @ 14	11 @ 16
" Wild, ₩ pair...........	— @ —	15 @ 60
PIGEONS, ₩ dozen...........	75 @ 1 50	1 25 @ 2 50
SNIPE, ₩ dozen..............	40 @ 1 75	35 @ 1 50
WOODCOCK, ₩ pair...........	1 12 @ 1 25	50 @ 75
GRASS PLOVER, ₩ dozen.....	2 25 @ 2 50	— @ 2 00
REED BIRDS, ₩ dozen........	— @ —	75 @ 1 25
GROUSE, ₩ pair..............	— @ —	50 @ 75
PARTRIDGES, ₩ pair.........	— @ —	50 @ 1 00
VENISON, ₩ lb...............	— @ —	10 @ 17
PEACHES, ₩ basket..........	20 @ 1 00	— @ —
APPLES, ₩ barrel...........	75 @ 1 50	50 @ 1 50
PEARS, ₩ barrel............	1 25 @ 6 00	2 00 @ 6 00
QUINCES, ₩ bbl..............	— @ —	2 50 @ 4 50
WHORTLEBERRIES, ₩ hf bush	2 00 @ 2 50	— @ —
GRAPES, ₩ case..............	1 50 @ 3 25	1 50 @ 2 75
" ₩ lb....................	1½@ 6	2½@ 8
POTATOES, ₩ bbl............	1 00 @ 1 75	1 12½@ 1 75
" Sweet, ₩ bbl........	1 50 @ 3 00	1 25 @ 2 75
TOMATOES, ₩ box...........	25 @ 50	20 @ 30
TURNIPS, ₩ bbl..............	1 00 @ 1 50	50 @ 1 00
BEANS, ₩ bushel.............	1 35 @ 1 85	1 30 @ 1 75
EGG PLANTS, ₩ bbl..........	1 00 @ 1 50	1 25 @ 2 00
PEAS—Canada, in bond, ₩ bu	— @ —	— @ —
" new, green, ₩ bag......	1 00 @ 2 00	1 50 @ 2 50
CORN, green, ₩ 100..........	50 @ 1 00	50 @ 75
STRING BEANS, ₩ bag........	25 @ 50	50 @ 75
CARROTS, ₩ bbl..............	1 00 @ 1 50	1 25 @ 1 75
BEETS, ₩ 100 bunches........	1 00 @ 1 50	1 00 @ 1 50
CABBAGES, new, ₩ 100........	2 00 @ 7 00	1 75 @ 6 00
ONIONS, ₩ bbl................	2 50 @ 2 75	2 50 @ 4 00
CRANBERRIES, ₩ bbl..........	— @ —	— @ —
SQUASH, ₩ bbl................	50 @ 75	50 @ 75
WATERMELONS, ₩ 100........	7 00 @14 00	— @ —
NUTMEG MELON, ₩ bbl......	50 @ 1 50	— @ —
PUMPKINS, ₩ 100.............	— @ —	2 00 @ 4 00
CUCUMBERS, ₩ 100............	20 @ 30	20 @ 25
CAULIFLOWER, ₩ dozen......	— @ —	1 00 @ 3 00
CELERY, ₩ dozen..............	— @ —	75 @ 1 00

Notwithstanding the remarkahle vigor of the fall trade, and the consequent urgent requirements as to financial facilities, Money has worked almost uniformly easy in the loan and discount lines, since our previous issue. Very extensive dealings have heen reported in the leading kinds of Produce and Merchandise, with a free movement in Stocks and Bonds, at generally buoyant prices. A firm and hardening market has heen reported for Real Estate, on a good investment demand.....Transactions in Breadstuffs have been unusually heavy, largely for regular trade purposes, though in the instances of Wheat and Corn, chiefly in the speculative interest at higher quotations, Winter Wheat rising very sharply toward the close, as influenced mainly by the stimulating reports from Chicago and other points in the interior, as also, toward the close, by Cable. Export purchases of Wheat, Corn and Flour have been on a liberal scale, notably so of Winter Wheat. Near the close, Spring Wheat attracted more attention from shippers and was marketed to a fair extent on the basis of $1.08¾ for No. 2 Chicago, in store; $1.10½ for No. 2 Milwaukee, to arrive; $1.12 for choice ditto, prompt delivery; $1.16½ for new crop, No. 1 Duluth to arrive from Buffalo (the first sale of the latter made, this season, made here on Thursday, 7th October, by Messrs. S. Freeman & Co., to a local miller). ....Corn has been offered with reserve, and quoted firm at the improvement, with a fairly active inquiry reported. ....Rye has been quoted decidedly dearer, is in meagre stock, and much wanted for shipment.....Oats have been unsettled, generally—toward the close, receding in price, with more eagerness shown to place supplies, and a less urgent call.....Barley declined materially, is plentiful and quite moderately sought after.....Flour left off in favor of holders, on a brisk call for supplies, as well for export, as on home trade account.... As practically under speculative control, Mess Pork and Western Steam Lard, have hcen advanced materially, on active and excited markets, Mess Pork closing, however, tamely, and in the option line, depressed and wholly unsettled.... Large transactions have been reported in Lard for shipment.....Beef and Beef Hams have been moderately sought after at about previous figures.....Butter, Cheese and Eggs were quoted higher, but closed again in favor of purchasers.....Fruits attracted increased attention. Extraordinary heavy shipments of Apples have been noted, mostly for Great Britain. Freight contracts have been reported here for the current month to an amount exceeding 125,000 bbls. for all destinations, the bulk going to Liverpool, London, and Glasgow by steam. Important outward movements are also advised from Boston and Montreal. ....Freer offering of Hops led to a further decline, and a moderate degree of activity.....Seeds have had a slow sale at irregular figures....Cotton has been in fair request, chiefly in the way of options, but at very variable quotations, leaving off more steadily.....More inquiry has been reported for Wool, which closes more firmly..... Hay and Straw ruled stronger as to prices, on light offerings and a fair demand.....Naval Stores and Petroleum have been on the advance, on reduced offerings and a more urgent demand.....Rallying from the depression and irregularity mentioned in our preceding review, Ocean freights have been remarkably active for Breadstuffs, especially for grain, at advanced rates, closing firmly, including by steam to Liverpool, 6¼*d.* per bushel, London by steam, at 8@½*d.*; Glasgow, by steam, at 6@6½*d.*; to Bristol, by steam, at 8½*d.* per bushel; to Antwerp, by steam, at 8¼*d.* per bushel, and sail to Cork, for orders for vessels of average carrying capacity—say 3,000 to 4,000 qrs.—5*s.* 6*d.* per qr. of 480 lbs.... The visible supplies of Wheat—embracing the hoards at lake ports, in transit, and on the seaboard—at latest dates, embraced about 14,360,800 bushels; of Corn, 19,812,200 bushels; of Rye, 664,850 bushels; of Barley, 1,403,500 bushels, and of Oats, 2,746,400 bushels, against about Sept. 1, an aggregate of 14,716,000 bushels Wheat, 19,012,000 bushels Corn, 574,000 bushels Rye, 265,000 busbels Barley, and 1,626,000 bushels Oats.

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Sept. 13..............	16,677	106	4,352	36,849	24,539
Sept. 20..............	14,554	130	5,448	43,650	23,214
Sept. 27..............	12,770	148	5,121	38,559	30,163
Oct. 4..............	13,422	60	4,593	39,682	32,607
Total for 4 *Weeks*..	57,223	444	19,614	168,740	110,523
do. for prev. 4 *Weeks*	51,282	227	19,916	137,773	107,642
	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per week......	14,306	111	4,903	42,185	27,631
do. do. *last Month*..	12,820	57	4,979	34,443	26,910
do. do. *prev's Month*.	14,245	97	5,022	36,885	23,814

Prices for beeves per lb. estimated dressed weight:

WEEK ENDING	*Range.*	*Larger Sales.*	*Aver.*
Sept. 13...........	7 @11 c.	8¾@ 9¾c.	9¼c.
Sept. 20...........	6⅞@11½c.	8¼@ 9½c.	9 c.
Sept. 27...........	6½@11½c.	8 @ 9½c.	8¾c.
Oct. 4...........	6¼@11½c.	8 @ 9½c.	8¾c.

Beeves.—A slow, dull market has prevailed for the most of the month. Cattle have heen in abundance, with an unsatisfactory dressed meat market, and very little demand from exporters. The month closes with some demand for prime and extra. A conspicuous feature has been the number of Texans and Colorados on sale; the former sold for 6¼@6¾c., and the latter for 7@7½c. Native cattle ranged from 7c. to dress 55 lbs., to 9c. to dress 56 lbs. Choice lots for 10¾@11½c., and a few extras for 12c. to dress 58 lbs ....**Milch Cows.**—There has heen a light trade from lack of stock. The demand good and prices firm at $35@$55 per head for common to prime cows, with a few extra ones at $60....**Calves.**—There was a gradual falling off in the number sold during the month, but the market was active under the influence of a light run. Grassers 2@2¼c. live weight; buttermilk and fed calves at 2½@3½c.; common to choice veals at 5@7½c., and fancy lots at 7¾c... **Sheep and Lambs.**—A better feeling prevailed at the close of the month, and the market ended fairly active owing to a prospect of lighter supply. Common to good sheep sold at 4@5c. per lb., live weight, prime lots at 5¼@5½c. Lambs ranged from 5@6c., while some prime State lambs brought 6¼@6½c.... **Swine.**—Market quiet and a strong downward tendency; State hogs sold at 5¼c., with heavy ones as low as 4¼c.

The Horse Market.—The epidemic which has been among horses has had its influence upon the market. There have heen no fatal cases reported, and the trouble is about passed. There is no special interest in the horse trade; the supply is in excess of the demand, and the prices in favor of the huyer.

Prices of Fertilizers.

Nitrate of Potash (95 per cent), per lb............	8 @8½c.
Sulphate of Potash (potash 44 per cent), per lb..	3½@4 c.
do. do. (potash 27½ per cent, per lb..	1½@1¾c.
German Potash Salts (potash 12 to 15 p. c.), p. ton.	$14.00@16.00
Muriate of Potash (potash 50 per cent), per lb....	2 @2¼c.
Nitrate of Soda, per lb..............................	4¾@5 c.
Sulphate of Ammonia (25 per cent), per lb.......	4½@4¾c.
Dried Blood (ammonia 13 per cent), per ton.....	$40.00@45.00
No. 1 Peruv. Guano, Lobos, ₩ ton....................	46.00
do. do. guaranteed, ₩ ton, cargo M........	56.00
Soluble Pacific Guano, per ton..........................	45.00
Excelsior Fertilizer Works, Fine Ground Raw Bone...	55.00
Mapes' Complete Manure (clay soils), per 1,000 lbs......	25.50
do. do. do. (light soils), per 1,000 lbs.....	25.50
do. do. do. "A" Brand (wheat), ₩ 1,000 lbs.	20.00
do. Tobacco do. do.	52.00
do. Fruit and Vine Manure, per ton............	37.00
do. Pure Raw Bone, per ton.....................	38.00
Homestead Superphosphate, per ton	40.00
do. Tobacco Grower, per ton.....................	60.00
Banner Raw Bone Flour, per ton........................	45.00
Stockbridge Rye Manure, per ton.......................	45.00
do. Wheat Manure, per ton......................	45.00
do. Seeding Down Manure, per ton..........	40.00
Bowker's Wheat Phosphate, per ton....................	40.00
Walton, Whann & Co.'s Raw Bone Phosphate, per ton.	40.00
Gypsum, Nova Scotia, ground, per ton.................	8.00

Catalogues Received.

The following are the special Autumn Catalogues that have been received up to the time of going to press:

NURSERYMEN.

CHAS. BLACK & BRO., Hightstown, N. J.—Price List of Trees and Plants for fall and spring planting.

B. K. BLISS & SONS, No. 34 Barclay street, New York City. The autumn catalogue of this old house is full, as in former years. Dutch and Cape flowering bulbs; complete list of small fruits and seeds, etc., for farm and garden.

M. COLE & CO., Atlanta Ga. A descriptive list of the Atlantic Nurseries; fruit and ornamental trees, roses, etc.

WM. H. CARSON, No. 125 Chambers street, New York City, sends out a neat catalogue of bulbs for autumn planting, with directions for their culture.

HENRY S. DREER, 714 Chestnut street, Philadelphia, Pa. A full assortment of bulbs, plants, etc., with rules for their culture and management.

FARLEY & ANDERSON, Union Springs, N. Y. A fall trade list of the "Cayuga Lake Nurseries." Duchess grape, etc.

EDWARD GILBERT, Southwick, Mass. Price-list of native perennial plants, orchids, rare ferns, etc.

JENKINS' NURSERIES, Winona, Ohio. A wholesale list of evergreens, small fruits, seeds, Prentiss grape.

KELSEY & CO., St. Joseph, Mo. Price-list of the "Vineland Nursery."

D. W. LANGDON, Mobile, Ala., sends a neat and full catalogue of fruit and ornamental trees, small fruits, roses, evergreens, etc.

J. T. LOVETT, Little Silver, N. J. The fall catalogue of the Monmouth Nursery is devoted specially to all kinds of small fruits.

GEO. P. MURRELL, Austin, Ark. A descriptive price-list of the "Austin Nurseries."

D. S. MYER, Bridgeville, Del. A neat catalogne of fruit and ornamental trees, small fruits, plants, roses, etc.

E. M. POTTER, Kalamazoo, Mich. "Asylum Hill Nurseries"; small fruits and ornamental trees.

JOHN SAUL, Washington, D. C. A neat catalgone of trees, fruit, and ornamental shrubs, roses, and greenhouses; also descriptive list of Dutch and other bulbs.

GEO. S. WALES, Rochester, N. Y. Strawberries, shrubs, vines, and roses.

J. C. VAUGHAN, 45 La Salle street, Chicago. A neat illustrated list of bulbs, grasses, and florist's supplies.

E. WYMAN, Jr., Rockford, Ill. Price-list of plants for fall planting.

PETER HERDERSON, & Co., No. 35 Cortlandt street, New York City. A neat circular of hulbs and winter flowering plants, roses, etc.

GEO. S. JOSSELYN, Fredonia, N. Y.—Trade price-list of grape vines, small fruits, etc.

F. A. SINCLAIR, Mottville, N. Y. An illustrated price-list of the excellent common sense chairs and rockers.

A Removal.—One of our old advertisers, Mr. Blunt, the inventor of the Universal Force Pump, and for some time associated with the Nason Man'f'g Co., has again assumed the entire manufacture and control of his favorably known pumps, with an office at N. Y. City.

Will a Creamery Pay?—Will hutter-making pay anyhow? If it will pay to make good butter in the private dairy, then a well managed creamery will pay; but it must be well managed. A question to which this is the answer comes to us from Montgomery Co., Pa. There are several reasons why creameries fail to he profitable. If one farmer's milk has 7 or 8 per cent of cream and another's has 20, and others all along between, the poor milk being largely in excess, when dividends are made according to the weight of milk furnished, it is clear that not only do the men who furnish good milk lose heavily, but the creamery loses also. The cream and the hutter, of hadly fed, or half starved, cows has no flavor. Such butter cannot sell at a high price, and a little such milk or cream will damage the whole product. Creamery butter that cannot beat "Oleo," is made at a loss, and ought to be.

Asbestos Liquid Paints.—Through a number of years, the H. W. Johns Mfg. Co. have established an enviable reputation for making liquid paints that are remarkable for their durability and beauty. Their Ashestos Liquid Paints have real merit, and all who contemplate painting their farm and other buildings should hear this in mind. We can gladly refer the reader to our recommendations of this firm and its paints in the past.

Moss Collars for Horses.—During the late war the Northern soldiers became acquainted with Southern Moss in all its forms. They saw it growing in long gray streamers from the cypresses in the swamps. They saw the negroes gathering it, sweating it, and rubbing it free from the outer coats, leaving the horse-hair like, wiry threads which form the inside and are the useful part. This, in trade, is known as Southern Moss, and is used like horse-hair for stuffing seats, beds, etc., and as an "adulteration," so to speak, of curled hair. Twisted into ropes, it gets a regular curl like horse-hair, and it requires a moderately close inspection to tell which is which. The soldiers found saddle cloths plaited of this moss by twisting it into cords, to be most excellent, curing saddle-galls, and preventing sweat-blisters, and pads made to go under mule-collars, and wherever the harness galled, were good also. We have received a well-made horse-collar of this material, bound with leather at top and bottom, and with leather fenders to prevent wear from the trace chains. They appear to be a very good article, and we see no reason why the manufacturer, Mr. A. D. Martin, of Louisiana, should not have a large trade in them, both South and North.

Cord Binders for Harvesters.—A number of different materials as straw, and wire, have been in use hy the self-binding harvesters, but farmers are not satisfied with the work, and have frequently applied for a binder that would employ a cord. The manufacturers of the Champion Reapers have developed an Antomatic Cord Binder, which has done excel ent work in the field during the past season, and hids fair to meet the want of those who have grain to cut, and wish to bind it in a neat and substantial manner.

Grass Seed.—"C. M. H." The seeds of the common grasses will retain their vitality two or three years, and even longer if kept dry, hut the longer they are kept the slower they are in coming up and the fewer start.

Concrete Buildings.—"H. W. G.," Steuben Co., N. Y. In Dec., 1874, we gave full descriptions of the method of preparing Concrete, and of building with it. That or any other single back number of the *American Agriculturist* for 24 years past is mailed for 15 cents.

Sporobolus Indicus—Smut Grass.—In response to a request in the September number, D. L. Phares of Starkville, Miss., sends the following notes on the Indian Drop-Seed Grass or Smut Grass: "This perennial plant from India is thoroughly naturalized and at home in our Southern States. In some localities it is known as "Carpet Grass," as are also several other grasses. Its generic name is founded on the fact of its easily shedding its seeds, and it is hence called Indian Drop-Seed Grass. Many of the panicles become affected with a dark-colored parasitic growth, which adheres tightly to clothing coming in contact with it, giving it a smutty appearance, and hence the grass is appropriately and more generally called 'smut grass'. On many commons, uncultivated fields and yards, it grows abundantly and luxuriantly, and furnishes good grazing from April until frost in autumn. It thrives well under much grazing and many mowings, and grows promptly after each, on good, moist land. Cattle and horses are fond of it; but if not kept well grazed or frequently mowed it becomes tough and they refuse to eat it unless quite hungry. From long fibrous roots it sends up clumps of long leaves in great abundance. I have just measured some leaves three feet long. This, however, is an extreme length. The culms are usually one and a half to three feet high, with panicles six to eighteen inches long. I have just measured within a few steps of where I am writing, culms four feet eight inches long with panicles eighteen inches. The appressed panicles might be mistaken for spikes. The clumps enlarge rapidly, and soon occupy the whole ground densely. In 1878, I sent to the Department of Agriculture for analysis some hay of this grass. Dr. Collier's analysis shows in 100 parts 12.46 alhuminoids, 55.44 carbohydrates, 25.91 cellulose, and 6.19 ash. Although containing so much nutritive matter, it is not so much relished dried as many other grasses.

Some Notes on Pork.—Much as it is the custom to decry pork, it is "the farmer's meat." It is the only steady meat that many farmers can afford to have, unless too rich to need to farm at all. One reason why so much has been said against pork is the careless way in which it is often prepared. Pork that is used should always be properly cured and in good condition. I send a few recipes of my own.—*Fried Pork.*—This should be cut in rather thin slices and parboiled in a little water. Pour off the water and fry quickly. Lay it on the platter and pour over it a few tablespoonfuls of sweet cream, or if preferred the gravy in which it has been fried. Or make a hatter with two eggs, half a cupful of sweet milk, and flour enough to make a thick paste, and dip the slices in this after they have been fried. Return the pork to the spider, and fry it in the batter, and it makes quite an addition to the dish. *Baked Pork.*—A square piece of fat pork may be soaked over night in sweet milk, and washed off; cut the rind in squares and bake until tender. This is very good. *Boiled Pork.*—A piece of pork boiled an hour and a half, than cut in slices and treated to a dash of pepper and vinegar, catsup or Chili sauce, makes a desirable dish to be eaten either hot or cold. "R. C. D.," Walworth Co., Wis.

Cubic Feet in a Ton of Manure.—"C. T. S.," Springfield, O. A ton of manure as generally hauled out in the spring, moist and compacted more or less, and then thrown into a wagon, will contain 40 to 48 cubic feet. It is very indefinite and must necessarily be so.

Weeds.—The farmers should be deeply interested in the two leading points concerning weeds: how they get into the fields and garden, and how to get those out that are already in. Many of the seeds of weeds are sown with those of the crop, especially is this the case with those that are nearly of the size, color, etc., of the grains, and grass seeds. Great care should be exercised in sowing only pure seeds. If the weeds are already in the soil, the quicker steps are taken to eradicate them the better. Let no weeds go to seed. This will end the annuals. With perennials the work is more difficult, hut it should be remembered that they are much more easily destroyed when young. Cut frequently and dig out by the roots when possible.

A Peach Trouble.—"C. W." Wethersfield, Conn., writes: "Here are leaves from the twigs of seedling peach trees. They have appeared on our young trees in late summer and autumn, for a few years past. We throw the seeds about on our vegetable garden where they have a good soil and pretty careful cultivation, and do not have a separate nursery for the few trees we need for ourselves or to give away. I would be pleased if you could give me any light on this matter, whether it is very injurious or whether there is a remedy. I have trimmed off the affected twigs from some trees, but the trouble soon reappears. They grow rapidly nevertheless. It seems to be unlike the curling of the leaves in early summer, which was so common a few years ago, and which caused the large trees to shed their leaves once or twice, perhaps more times, in the season."—The young peach leaves are affected with a parasitic fungus which grows upon the surface, sending in here and there small root-like outgrowths for the purpose of absorbing nourishment. The white floury, or frosty appearance of the leaves is due to the multitude of spores which have formed. The fungus is one of the White Mildews, a treatment of which, with illustrations, may be found in the *American Agriculturist* for December 1879, page 508. The oaks, maples, willows, lilacs, etc., are attacked by various closely related species of this same group of White Mildew. The European Grape Mildew—a disease which has been so disastrous to the foreign vineyards, belongs to this same group. The remedy is Flowers of Sulphur, dusted on as soon as the mealy or frosty appearance is observed. Cutting away the twigs is not recommended, as it can do very little good.

The "International" Sheep Show.—The display of sheep at Philadelphia was not largely International; but contained many excellent representatives of our own flocks from the East, the Great Plains, and Pacific Coast. Of the few hundred sheep on exhibition about half were Merinos, and the others were distributed amongst the Leicesters, Lincolns, Southdowns, Hampshires, Shropshires, and Oxfordshires; some of the latter were recent importations from English flocks, and of great size. The attendance of wool-growers and breeders was not large. During the discussion the fact that "the manufacturers desire the production of precisely the kind of wool the farmers find most profitable to grow," was considered. A national registry of sheep was provided, and a winter meeting for disension appointed, to be held in Washington in January next.

Another Adulteration in Butter.—The New York dealers in butter, finding that the tubs overran in weight, five to six pounds, were at a loss to account for the fact, until they discovered that the increase in weight was caused by an addition of powdered soapstone. This "loaded" butter came from the city of Cincinnati. The powdered soapstone is white, fine, and tasteless, and is sold for $20 per ton. It is not butter!

Canada Thistles.—Daniel Keefer, of Penn., tried the salt cure for Canada Thistles. He cut the thistles short, August 1st, and put a tablespoonful of salt on each stalk or stub. They wilted at once, dried, and by Oct. 1st, had disappeared. This requires even less patience in application than the persistent following up with the knife, and cutting them as one does asparagus just below the surface of the ground.

Barrels for Keeping Roots.—The following is from one of the essays, "Keeping A Cow on Cape Cod," by Mr. Nickerson, published in the new book, "Keeping One Cow," and gives his method of using barrels for storing roots. "We have a way of our own for keeping our roots in the absence of a vegetable cellar, or when we do not want them in the house cellar. We take any old barrels, set them in the ground, the chine just coming to the top of the ground (we do not want a head in either end of the barrels). Into these headless barrels we put our beets, turnips, cabbages, etc. As the weather grows cold, we cover the barrels with some loose boards. Whenever it is cold enough to freeze hard, we throw over them enough hay or straw to keep out the wet. By this method we can, with very little trouble, at any time get out a barrel or part of a barrel of roots. In this way the roots keep in fine condition. Late in the spring, after the frost is out of the ground, turnips and beets will be as brittle and good as when pulled in the fall." Of course mice must be guarded against.

Success in Wheat Growing.—Mr. D. S. Curtiss in his new work on "Wheat Culture," concludes by saying: "Highest success in Wheat-growing involves and presumes skillful and intelligent management in other parts of farming, so that he who uniformly secures superior results with wheat and does not impoverish his land or soil cannot well be other than a good farmer, able to secure profitable results in all other farm operations. Hence to become an eminent wheat-grower is to become a complete farmer." Mr. Curtiss knows of what he speaks as he has had a wide experience in wheat culture.

Insects and Fruits by Mail.—It is safe to say that one-third of the insects and fruits sent us by mail arrive in a useless condition, on account of the frail character of the box in which they are enclosed. A paper or paste-board box rarely escapes crushing. Wooden and tin boxes usually come in good order. All such packages must be so tied that the contents can be examined. The use of nails or tacks, or closing by pasting, on strips of paper, subjects the package to full letter postage, often very heavy, and which we do not pay.

Draughts of Cold Air in the Stable.—Horses are quite sensitive to chilling draughts of air blowing upon them, and especially upon their heads; hence, in the construction of stables this should be borne in mind. Many stables have the horses face an alley along the sides of which are doors, or a large space is left entirely open; in such cases, whenever the rear stable door and the one leading out of the alley are open, the horses stand in a chilling draught, from which they can not escape. Horses, like many people, can stand much wind in an open field, but will catch cold while in a draught only a short time. With proper ventilation, the doors of the stable should be kept closed in cold weather, that no draughts may occur.

Native Amphibians.—"C. E. N.," of Lindsay, Ont., writes to us to aid him in procuring a horned toad. This we cannot do. He wishes to study its habits, etc. We advise him to study the habits of our native Amphibians, frogs, toads, tree toads, salamanders, newts, and lizards. Possibly there are no lizards in Canada, but there are others we have named. Their habits are exceedingly interesting, and not very well known even to naturalists, for very few have the patience or leisure to watch them and study carefully all their ways. All such knowledge is of use—with it we may be able to secure the cooperation of these animals in controlling our insect enemies, for they live upon insects, and it is at any rate well to know what good friends they are to man.

"YES."—Three Years for $4.

To snndry inqnirers. Several ask if they cannot make their own subscriptions to rnn three, four, or more years, at tbe clnb rates, as three years for $4, four years for $5, and so of other club rates. We will answer, "yes," wben specially desired, thongh tbe preference wonld be for a greater variety of names.

November Fair List.

STATE FAIRS

Alabama	Montgomery	Nov. 8-13
South Carolina	Columbia	Nov. 9-12

Industrial and District, &c.

Am. Institute	New York	Sept. 15-Nov. 27
Illinois Fat Stock	Chicago	Nov. 15-20

Poultry Exhibitions.

Terre Haute Pet Stock A s'n.	Terre Haute, Ind.	Dec. 14-21
New Je sey State Society	Newark	Dec. 14-21
Pottstown Pigeon Club	Pottstown, Pa.	Dec. 15-17
Dist. of Columbia Ass'n	Washington, D C.	Dec. 15-22
Eastern N. Y. Fanciers' Ass'n.	Troy	Dec. 22-28
Wide Awake Poultry Club	St. Johnsbury, Vt.	Dec. 28-30
Windham Co.	Brattleboro, Vt.	Jan. 4- 7
Southern Mass Ass'n	New Bedford	Jan. 4- 7
Saginaw Valley Ass'n	East Saginaw, Mich.	Jan. 11-14
Champlain Valley Ass'n	Burlington. Vt.	Jan. 11-14
Cent al Mass. Ass'n	Worcester	Jan. 11-14
Springville Ass'n	Springville, N. Y.	Jan. 12-14
Cleveland Poul'y & Pet Stock.	Cleveland, O.	Jan. 12-19
Western Penn. Society	Pittsburg, Pa.	Jan. 13-19
Lancaster Poultry Ass'n.	Lancaster, Pa.	Jan. 14-19
Vermont State Poultry Ass'n.	Rutland	Jan. 18-21
Union Pet Stock Ass'n	New Berlin,—	Jan. 18 21
Northern Indiana Poul'y Ass'n.	Fort Wayne	Jan. 18-22

Natural History of the Horse Bot.—Mr. J. H. Parmenter, of Framingham, Mass., gives very concisely bis observations and conclusions abont bots, the former are so accnrate and the latter so just, that we print tbem. Many horses dic of colic, on opening tbem bots are discovered, and the wise ones say, "Ah! no wonder be died. Tbere are bots enough to kill any horse."—Mr. P. writes: "I am a farmer, and bave been a butcber, and have killed and opened hundreds of horses at all times of tbe year, I do not pretend to know how bots get into tbe stomacb of tbe horse, and I never found them in any other part of the digestive organs. They gather nsnally npon onc side of tbe coating of the stomach, and arrange tbemselves just as thickly together as bees on their comb, and fasten there by the posterior part which is pointed. [This is an error. It is the anterior or bead part which is pointed and holds on by some little books.—Ed.] The bots cause thc lining of tbe stomach to tbicken up half an incb or more. When the horse is poor tbis spot becomes inflamed and looks as raw as cut meat. The bots live (as I suppose) npon the same food as tbe borse, absorbing it tbrougb tbeir skin, and when tbe borse is well fed does no appreciable harm; bnt upon an old and poor horse that has run at pasture all summer, and bas a great many bots in tbe stomacb, tbey become destrnctive to its life. I do not think the horse is ever attacked suddenly. I do not think yon can give the borse any medicine tbat will kill tbe bots and not kill the horse. The bots stay in the borse until tnrned ont to grass, or nntil tbat time of tbe year, and tben become mature and let go their bold, pass off in tbe mannre, and soon become a fly to lay more eggs. Tbe eggs, deposited on the bair of tbe borses legs and neck may be very readily taken off witb a sbarp knife, and this will prevent their being taken into the stomach.

Cool-Room in an Ice-House.—"T. B. B.," Potter Co., Pa. Your cool-room will prove to be cool enongh, if it is placed at one side of the ice-house, so that tbe ice may remain in one solid mass. The wall of tbe cool-room against the ice being simply of matched inch boards, will become cold, and lower the temperature of the room sufficiently for keeping fruits and meats.

Tarring Fence Posts.—"R. S. N.," Kenosha, Wis.—The posts should be thoroughly dry and seasoned, the gas tar should be applied hot, and all sprinkled thickly witb dry sand, so as to form a nniform coating. The posts shonld be left out of the gronnd nntil the coating bas thoronghly stiffened, or, indeed, hardened. Tbus treated, they will last for a much longer time.

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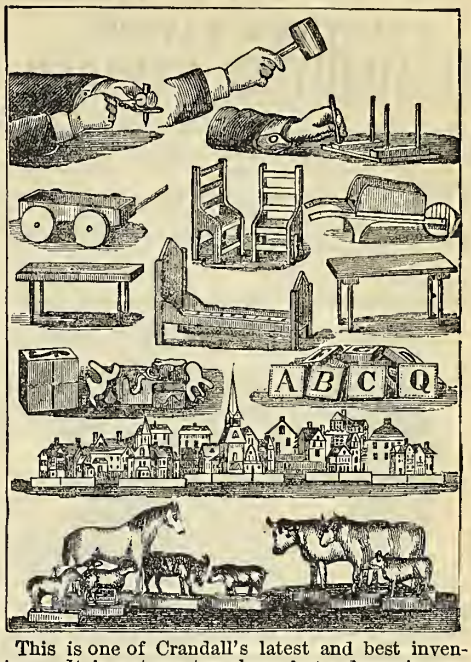

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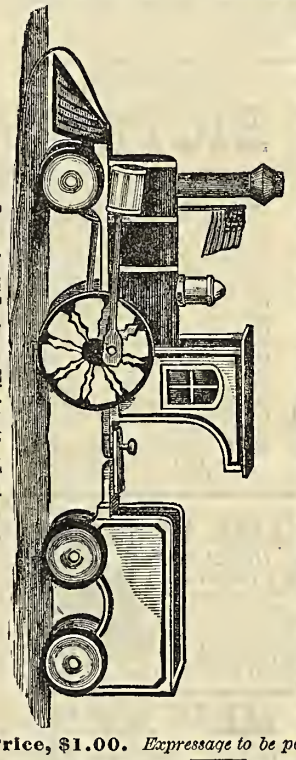

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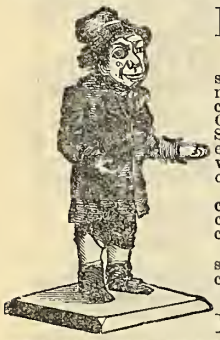

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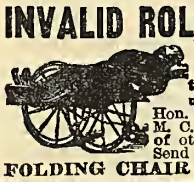

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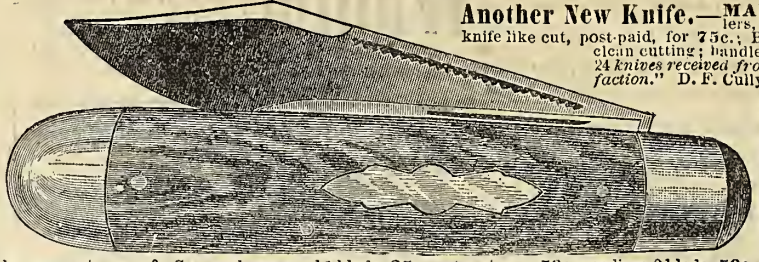

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THE BAKER GUNS.

Fig. 1

Fig. 2

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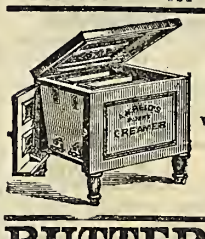

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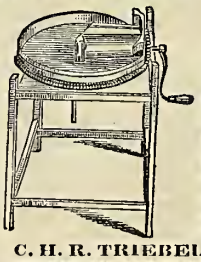

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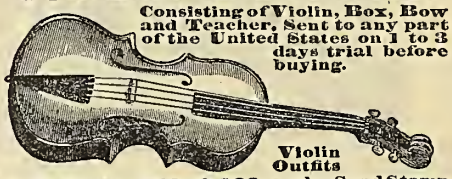
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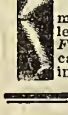
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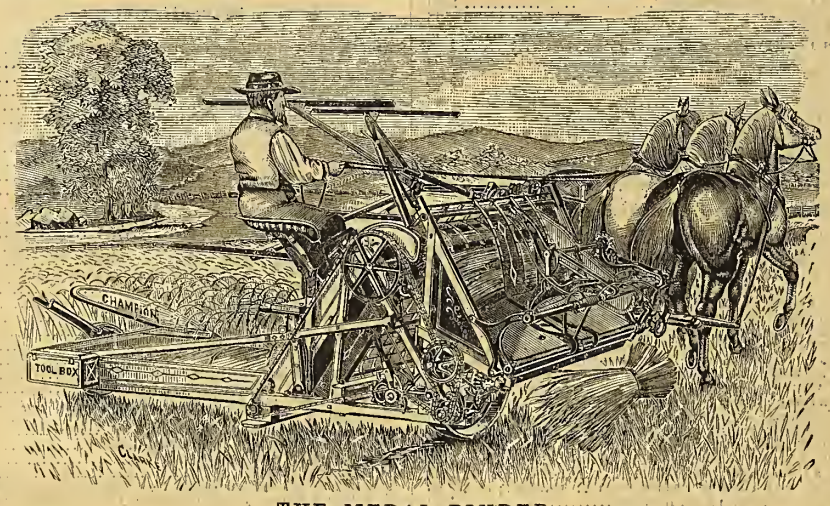

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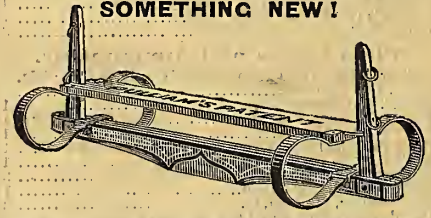

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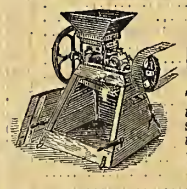

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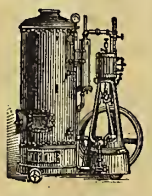

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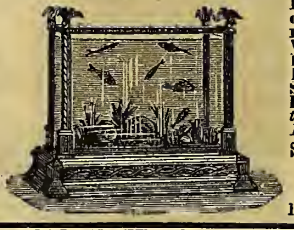

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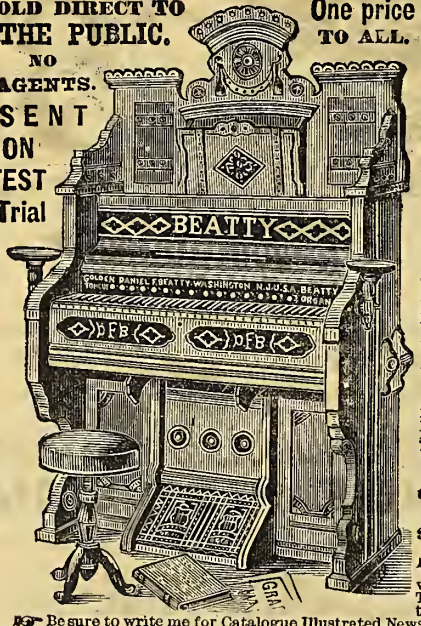

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IN THE WOODS IN WINTER.— *Drawn and Engraved for the American Agriculturist.*

In many parts of our country the woods are scenes of great activities during the winter months. It is at this season that most of the logs for lumber are cut in the great pine forests of Maine, Michigan, and some other States, and afterwards drawn to the frozen streams, where, when the ice breaks up, they go down on the "drive," and are finally made into rafts to be floated to the mills. The life in a lumber camp is a peculiar one, and to the stranger is full of novelty. The ring of the axe, the shout of the teamster, the crash of falling trees, and the roar of the logs as they are shot down the river banks, all give, to the person unaccustomed to the clearing of a heavy forest, a strange sense of destruction, and for the moment he looks upon man as the destroyer. Nothing changes the face of the landscape so much as the disappearance of a forest, and when this is accomplished in a few short winter days, it seems almost as if some giant power had been at work: as if a whirlwind had passed, and the great trees had been swept away.

Even in the older portions of the country, where, perhaps, the sound of the pioneer's axe died away a hundred or it may be two hundred years ago, the "wood lot" is a busy place, and the seat of much of the winter's hardest work. There is the firewood to cut and draw—enough to last the family through a whole year—and a few logs of pine, or oak, or whitewood, to be drawn to the mill to furnish lumber for some new farm building, or to use in adding to or repairing an old one. There is no time like winter for doing this kind of work, and there is no labor on the farm that pays better to do in season than this. To get the year's firewood in the winter—saw and split it, and have it all well seasoned and snugly piled in a handy shed, by the time the settled weather of spring comes, is of the most importance. It is a great saving of time in the busy days of spring and summer, when there are so many things that must be done then or not at all. There is a great economy of fuel in using dry wood, and it has an important influence on the temper and happiness of the household. Sizzling fire brands and soggy wood have no tendency to develop in either man or woman saintly characteristics. Dry wood, then, is not only a means of grace, but much cheaper than that which is cut fresh from the tree when needed.

The accompanying engraving gives a view of a wood-cutting scene in winter. The hunter, who appears to have been fairly successful, is just coming up, and so quietly in the soft, freshly fallen snow, that the choppers do not hear him or his speechless, well-trained dog. The four oxen having brought their heavy load to the top of the knoll, have paused for a breath before they are urged on, either to the wood-yard or to the neighboring saw-mill.

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AMERICAN AGRICULTURIST.

NEW YORK, DECEMBER, 1880.

Hints for the Work of the Month.

[*The Hints and Suggestions in these columns are never copied from previous years, but are freshly prepared for every month, from the latest experience and observations, by practical men in each department.*]

The days grow shorter, and reach their shortest duration, while the evenings are longer and longer. The time is favorable for looking backward in thought. Fore-thoughts are good in their time, but after thoughts, though often less honored, are worth a great deal more for shaping the future.

Account of Stock.—The last few days of this month and often the first week of the next, if indeed a longer time is not needed, are spent by all careful store-keepers and shop-keepers, and business men, in "taking account of stock." The goods are overhauled and examined, and an accurate list made out, of all articles, oftentimes with the cost and the selling price, or the cost and the present value, compared in adjoining columns. Thus the balance for the year can be accurately made out. Farmers ought to do something of this kind. It is not difficult, and if they do not plan to do it now, Christmas will pass, and the New Year will begin before they do it, and then it will be put over until another year. It is very easy to catalogue horses, cattle, sheep, and swine, and other live stock, and to set a fair price upon them. It is not difficult to estimate the amount of fodder; and the bushels of grain and roots are already, in most cases, accurately known. But a farmer's wealth lies in good part in labor expended, which will bear fruit another year, and in the far off future, and no estimate of the proprietor's business standing will be a just one which does not take into account such items as these: "20 acres sowed to wheat and grass, dressed with 18 loads of manure to the acre—say at a cost for labor, seed, and manure, of $700," "100 rods strip fence at $125"; the former item being placed in the "account of stock"—the latter in the "expense account," the same as "interest on the investment," "insurance," "repairs," "painting," etc.

"*What's the Use?*"—Will it make fatter beeves? Will it make better wheat and corn? will it make more milk and butter? Perhaps not; and yet it probably will help to do all these. The farmer will see, after the second year: 1st, whether or not he is advancing; 2d, where he may make important savings; 3d, what branches of his business pay best, which cost the least labor, and make the best returns. The nearer a farm can be conducted upon sound business principles the better for the farmer.

Live Stock.—As the season advances the live stock require increased attention; not only are they more directly dependent upon our care, but they are subject to discomforts from exposure, which seriously interfere with the profit of keeping them. Of all our domestic animals the pig is the most sensitive to exposure to rough weather, poultry next, in this order: fowls, ducks, geese, and turkeys, the last often doing better when exposed than if sheltered. Next to fowls, cows, then, working oxen and young cattle; next horses, which are used, unused horses, and sheep. Of these last the long-wool breeds are most sensitive to cold storms and snow, but close-fleeced breeds will stand almost any amount of cold if they have enough to eat, sheds to go under, and shelter from driving storms of rain and snow.

Horses, if well fed, usually feel bright and lively in winter, and young horses are, for this very reason, more easily trained than when the weather and running at pasture makes them dull. Whenever horses are used so as to warm them up at all, blanket them as soon as they stand still, if only for two or three minutes, those two or three minutes are sometimes enough to give a chill, which may end in pneumonia, or other serious troubles. Grooming saves feed, and also promotes health in horses, and should never be neglected. It will probably pay even to groom boarding horses, and it will certainly pay the owners to stipulate that their horses should be groomed daily. Blankets, except mere "dusters," are worse than useless in stables; they make the horse tender, and more likely to take cold when brought in hot. Litter very freely if you have the material; straw, leaves, swamp hay, etc.

Gypsum in Stables.—This article is admirable as a fertilizer upon clover, and an efficient absorbent of ammonia, and purifier of the air of stables. It is well to sprinkle it over the floor of both horse and cow stalls, as soon as they are cleaned out in the morning, and over the bedding at evening. When thus used, its effects are just as good, and probably better than when applied alone upon the land.

Cattle.—Store and dry cattle will go through the winter under dry sheds, and fed upon corn-stalks and swamp hay, but they will do much better if fed a little grain and roots, and well sheltered. It is not necessary to give them the care needed by

Milch Cows.—These ought to be well fed, and cleaned by a card and brush, *daily*, if possible, otherwise twice a week. They should be milked up to within four weeks of calving. It is a great temptation to dry off a cow so as to save the labor of milking, and not alone will hired men do this, but the farmers themselves, generally, do it, and think that they save a good deal in feed and labor, while in reality, with young cows, they impart a habit of going dry early, which will last them as long as they live. The better milch cows are fed, the better return they give, but feed judiciously.

Cotton Seed Oil-Cake Meal is being largely used and is worthy of being fed more extensively. Cotton seed is used in the Southern States with good results. The meal should be fed mixed with bran and best on cut hay. A little corn meal added gives flavor and color to the butter. Rowen or well cured lawn clippings are the best feed for giving color to cream and butter in winter.

Testing Cows.—Upon not a few of the best dairy farms—and yet, perhaps, it would be truthful to say upon a few such farms, the milk given by each cow is weighed at each milking, and once in a while, as her turn comes around, the amount of butter she will make is ascertained. This, if continued through the year, gives results which will enable the farmer to pick out his best cows. Though the system seems accurate, it is liable to one serious fallacy; a cow which is apparently in perfect health will give in one year a much larger quantity of milk and butter than she will in another, for reasons that are as yet not well understood.

Calves which are to be brought up away from the cow should be removed from the dams as soon as dropped. They will never—hardly ever—attempt to suck even one another's ears, and if fed carefully will fatten equally well with those on the cows.

Sheep are peculiarly sensitive to good treatment. A good shepherd is always gentle among his sheep. Ewes which are to lamb early ought to be by themselves and have better care as their time approaches. Feed a few more turnips and give them a little more liberal sprinkling of corn meal and bran, or oil cake.

Store Sheep and rams should be by themselves, and let fattening sheep have regular feeding and be kept quiet, giving them a very small yard and an airy but dark shed, supplied with feeding racks and troughs: never feed them in the open yard.

Pigs.—Nearly double the feed will be required to keep pigs from going back, after really cold weather comes on—say, when the ground freezes. It is then best to kill at once. Every farmer ought to be able to kill and cut up his own pigs. Butchers are often very rough and brutal. This is not necessary. Many a farmer who kills his own pigs does so because he wants the job kindly and humanely done. He actually thrusts the knife as if he loved the victim. Feed soaked corn, that is, corn which is covered with as much boiling water as it will take up in 24 hours. This is better for either fattening or store pigs than coarse meal, unless the latter be thoroughly cooked.

Poultry.—Hens will lay up to Christmas, if they have warm quarters. A manure shed, where mixed manure throws off considerable warmth, and which is closed in, but well ventilated, is an excellent place for fowls. They are kept warm and comfortable, their droppings are all saved, going to

enrich the manure, and they keep on laying, often all winter. At noon feed, in open weather, soft food—that is, boiled potatoes mixed with bran and corn-meal, or something of the kind; at night give a good feed of whole grain, throwing down enough to toll them off the roosts for an early breakfast, unless thereby you will be feeding an army of rats all night. In snowy and frozen weather, feed three times a day, and give only what they will run after at each meal.

Ducks.—Train them to spend the nights on a compost or manure heap, under cover. They will lay earlier, and eat less, for they will be warm.

Geese need regular feeding. They do well on potato and apple parings, a little corn, and a chance to pick up scattered clover leaves and heads which fall from the fodder racks.

Game Birds.—It is well worth while to look out for game birds during severe weather, when the ground is covered with snow and ice. At such times many quails perish, and if buckwheat and oats or other small grains be thrown under the shelter of evergreens, or along the fence rows where these birds will find it; they will winter much better for this care, and will not be likely to scatter very far in the breeding season.

Swamp Muck.—If the season remains open, no better work can be done than getting out muck from the swamp to be exposed to the freezing and thawing of the winter. It is always valuable as an absorbent, and often contains much ammonia.

Draining and Ditching may be pushed forward so long as the season is favorable; in fact, there is no better time for such work.

The Wood Lot.—Work may be done here during the whole month. It is the best season to cut timber for building purposes and for fencing stuff. For fire-wood, the season is not of so much importance, and yet that which is cut early in the winter is better than that cut later.

The Ice Crop in every section of the country is becoming more and more important. The season may be as unfavorable for ice as the last, but that is hardly possible. Nevertheless, a prudent man will be prepared to lay in his ice as soon as it shall have attained half the usual thickness, or even less. The probabilities are that an enormous quantity will be secured this season. It is being applied to new uses all the time, and its consumption in both town and country is greatly on the increase.

Notes on Orchard and Garden Work.

The Farmer, because these Notes are under a separate heading from those which relate to the proper work of the farm, may think that they are not intended for him. If this catches the eye of any one who has this impression, we would have a word with him. Those who raise fruits and vegetables as a business, do not need us to tell them what to do. It is for the farmer and others, inexperienced in such matters, that we give these monthly hints. The fact that, take the farm houses throughout the country, their tables, as a whole, show a great lack of variety, cannot be denied. In many, fruits are regarded as a luxury, and choice vegetables are a rarity. We have long endeavored to show that there is scarcely anything in the way of fruits and vegetables that can not be had by any farmer in the land, in the greatest profusion, if but a little thought be given to it. We do not look upon it as merely gratifying the palate with a variety, but as a matter of health and comfort which concerns the whole household. We therefore ask the farmer when he looks over the paper and comes to "Notes on Orchard and Garden Work," not to suppose that these are intended for what are called "professional" gardeners and orchardists. They are made for the farmer and intended to show him that there is no art or mystery in producing the choicest gifts of the orchard and garden that he can not learn and practise.

Orchard and Nursery.

Apples.—This has been a great apple year, and immense quantities have been shipped to various parts of Europe. This trade is now so well established that in planting, the American orchardist should have the foreign demand in view. Apples for shipping should be those that bear transportation, and also those that are in favor abroad, such as the Newtown Pippin, Spitzenberg, Baldwin, etc.

Fruit in the Cellar.—When the fruit cellar is separate from the house it should be kept just above the freezing point; such cellars do not require ventilation. Cellars under living-rooms must be ventilated, otherwise the gases given off while the fruit is ripening—and too frequently decaying—will endanger the health of the inmates. There is a demand for special care in this matter, at the present time, because the fruit has been so abundant that there is an unusually large amount stored in the cellars. If the house is so constructed that an opening can be made from the cellar into a chimney, ventilation may be very complete; an opening which can be closed at pleasure should be made to admit air from without when desirable.

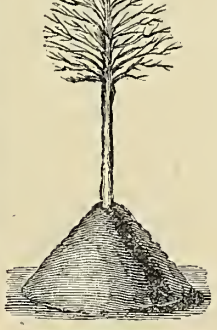
Cions should be cut early and before they have been exposed to hard freezing; select the most vigorous and well ripened shoots; tie in bundles, label and pack in fresh sawdust, damp, as it comes from the mill; this leaves no grit to dull the knives when grafting, as is the case when sand is used. In the absence of sawdust pack in sand.

Pruning, unless very large branches are to be removed, may be done at any time after the leaves fall, when the weather is pleasant. This is a good time to bring young trees into proper form.

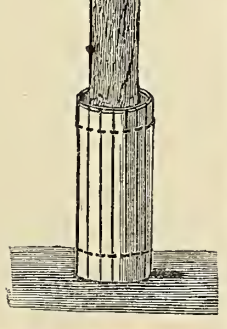
Tent Caterpillars.—Much time may be saved and vexation avoided by examining the orchard for the eggs of the Tent Caterpillar. This may be done on mild dull days during the winter. The eggs are glued closely together in a band around the smaller twigs as shown, near their ends, in the engraving. The burning of one of these clusters means the destruction of three or four hundred of the "worms" that otherwise would come from it in the spring about the time that the leaves start.

Seeds of fruit and ornamental trees are best kept in sandy soil or slightly damp sand, and so cool that they will not germinate.

Animals.—Winter is a trying time for young trees; the storms of wind and snow bend and break them. But perhaps the most serious injury is done by mice and rabbits. Clear away from around the trees all rubbish that may harbor mice. With young trees place a mound of earth (as in fig. 1) a foot in hight around each, and tramp it down. This serves to support the tree against winds and keep away the mice. Rabbits are more destructive than mice. They have a great distaste for



1.—TREE EARTHED UP.



2.—A LATH PROTECTOR.

flesh and blood, and by rubbing the trunks of the trees with cheap meat, or smearing them with blood by means of a swab, the trees may be effectively protected. A good protector is made of lath fastened together with wire, and the whole bound around the base of the tree, as in figure 2.

Manures.—By many the orchard is expected to yield two crops—one from the trees, and another more directly from the soil, as it may seem. It is, useless to expect the best fruit from trees that are robbed of their nutriment by quick-growing crops. Ordinarily, when the trees come into bearing, they should have the land to themselves. If circumstances make it necessary to grow some crop between the trees, both the crop and the trees should be manured. Well rotted manure is best, and when spread let it cover the whole ground and not be heaped about the trunks of the trees where there are no small roots to make use of it. Winter is an excellent time to spread the manure, as it can be drawn upon sleds which more readily pass under and among low trees than a wagon. A dressing of lime will often be of great benefit to an orchard.

The Fruit Garden.

There is but little to be done in the fruit garden, except to finish up fall work and go into winter quarters. Mild days will give an opportunity to finish pruning currants, grape vines, etc., at the same time saving any of the wood that may be needed for propagation.

Winter Protection.—Many plants are killed by too much protection. For example, strawberries are hardy, and the covering of straw, marsh hay, etc., that is recommended for them is not so much to shield from cold as to prevent frequent freezing and thawing of the soil. The covering should be mainly around and not upon the plants.

Shrubs that are not quite hardy do not require bundling up, as was thought necessary not many years ago, when more plants were smothered than benefited by the covering. A little brush, or better, some evergreen boughs placed close to the shrub will ward off the severe winds, modify sudden changes of temperature, and be a sufficient protection. Tender raspberries must be bent down, and covered with earth before freezing prevents it.

Manure.—Coarse manure may be applied around currants, gooseberries, blackberries, etc.; in the spring rake off the straw and fork in the rest.

Kitchen and Market Garden.

If the autumn has been prolonged, and the weather is still open, much work mentioned in the October and November Notes may be done now.

Celery, while in trenches for the winter, should not be allowed to freeze hard—a moderate freezing does no harm. The hay or straw for covering should be at hand when needed. As soon as the winter fairly sets in, the covering, which until then was slight, should be made about one foot in thickness. Celery in boxes, in the cellar, is more apt to suffer from heat than cold. The boxes, about nine inches wide, are made of old stuff, and as long as convenient; set the celery in them as in trenches. The boxes should be placed their own width apart, thus avoiding a solid mass of celery which would heat and decay. The cellar should be as near the freezing point as possible.

Cold Frames will now need daily attention. The plants kept in them are not to grow, and should they start they would be ruined. The sashes are to be kept continuously closed only during the coldest winter weather; at all other times, especially during the day, they must be lifted. When the temperature of the atmosphere is above freezing, the sashes should be off altogether.

Cellars where roots are stored need to be kept cool, otherwise the roots will shrivel or start into growth, and be injured. Roots for table use, if kept in earth or sand, are fresher and better than others.

Parsnips left in the ground are improved in sweetness by freezing. They can be dug during a thaw.

Salsify is also hardy, and may be left in the ground with the same treatment as Parsnips.

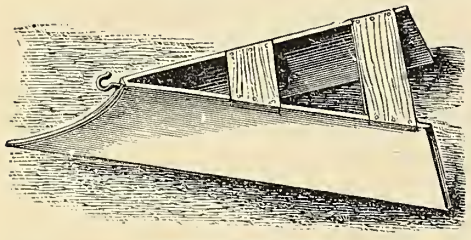
Horseradish may be dug before the ground freezes, and stored in a box of earth in the cellar. If a heavy covering of straw is put over the bed, the roots may be dug at any time during the winter.

Seeds.—The garden seeds should be assorted, labelled, and stored in a dry cool place, out of the way of mice. Seeds, like the parsnip, that are not good after the first year, should always be fresh. If there is doubt concerning any seeds, throw them away; use only good seed, and of the best

varieties; these precautions are among the prime essentials of good success in the vegetable garden.

Flower Garden and Lawn.

Only the most thoroughly composted manure should be used upon the lawn, and even then the seeds of some weeds will probably not be killed. In respect to weed seeds, there is no risk to be run in the use of artificial manure upon the lawns. Heavy falls of snow may do much damage to trees, especially the evergreens. The snow should be shaken from the limbs before it gets hard and icy. When deep snows drag down the lower branches, the shovel should be used in removing the load



A CHEAP SNOW PLOW.

that might break them. A snow plow should be at hand. Where there is a long path, a horse snow plow is a great saving of labor. The one shown in the accompanying engraving is easily made. Always follow the established paths with the plow, and if there are places where strangers or thoughtless persons will be apt to "cut across," put up guards of wire. When the ground is covered with snow the birds should not be forgotten; provide both food and water for them in suitable places.

Greenhouse and Window Plants.

Chrysanthemums that have flowered should be cut down and the pots placed in the pit or cellar, and left for a time to rest without water.

Bulbs in Pots should now be well rooted, and brought out of the cellar for early blooming. It is better to bring a few forward at a time, at frequent intervals, in order to have a succession of flowers.

Hanging Plants.—To water them perfectly, plunge the baskets into a tub of water, and let the earth soak; after dripping has entirely ceased, they may be returned to their places.

The Temperature of a greenhouse is much easier regulated than that of a living-room. The thermometer should stand at about 70° in the day time, and may deseend ten or fifteen degrees during the night. This temperature is best for most persons.

Dust.—Plants ought to be covered with a cloth or newspapers when sweeping is being done. Smooth and thick-leaved plants, as Ivies, can be sponged, which will add to their health and beauty.

Valuable New Books.

Some new volumes advertised elsewhere are specially intended for our great family of readers.

FARM HOMES IN-DOORS AND OUT. By E. H. Leland, contains a vast amount of useful information communicated in an attractive narrative style. The table of contents, printed on third cover page, conveys an idea of the scope of the work. A copy should be in every family. The book is elegantly gotten out, on tinted paper, in black and gold binding, and will make a most suitable holiday present.

BAILEY'S BOOK OF ENSILAGE, published last year, has attracted considerable attention. The price ($2.00) has been so high as to prevent its general circulation. The new volume is supplied at the popular price of $1.00. It contains all the ensilage matter of the first $2.00 edition. Those wishing to familiarize themselves with this method of preserving green fodder will find the desired information in this volume.

WHEAT CULTURE. By D. S. Curtiss, conveys hints and suggestions to farmers as to how they can double the yield and increase the profits.

BARN-PLANS AND OUT-BUILDINGS is a volume for which there has been much demand. The book proposes to give the desired information concerning the economic erection and use of all structures which the farmer may require. It is furnished at a popular price.

A Special Favor Asked.

1.—There are about **42,000** different Post Offices in this country, to a large portion of which this journal is mailed regularly, to subscribers. Besides these, it goes to many other points in almost all parts of the habitable world.

2.—A *separate* book account, with alphabetical index, must be kept with each and *every* Post Office, whether it receives one, five, or five hundred copies of the paper, and the names of subscribers received in different letters, must all be *brought together* in the proper place in these mail books.

3.—As this is a great work, requiring the care of experienced, careful clerks, it is very desirable to give them every facility, and all the time possible. It can be best done if begun the moment this number is mailed, and not crowded into a few days and nights, about new year's day.

The Special Favor Asked is, *that each reader will, on seeing this paragraph,* **at once** *send in his or her own renewal for volume* 40 (1881), *and also the subscriptions of any friends who may be disposed to join our family of readers for the coming year. It will take no more time to do this now, than later on, and will greatly help us.* (☞ *A Subscription Blank is furnished on page* 532.)

Extra Copies for 10 Days.—We shall print an extra edition of this number, and any new subscribers for 1881, whose subscriptions are received *prior to December 10th* will have this December number free. This applies to *all* new subscribers, premium clubs included.

For the Whole Country.—As to the real work and scope of the AMERICAN AGRICULTURIST, it "knows no North, no South, no East, no West," as separate fields of investigation. While the principles of cultivation, of plant growth, of home comforts, are the same everywhere, the world over, the Editors will hereafter, more than ever before, travel through various parts of the whole country to study the wants and methods resulting from the local differences in soils, crops, climate, implements, customs, etc. None of them reside in the city, but all have their country homes, and speak and write from actual experience and observation.

WELL WORTH LOOKING AFTER.—The **331** numbered Articles, and the hundreds of *good* Books offered to our readers in the Premium List were selected with great care, and there are some things at least that are just what every Reader will desire. The terms on which they are offered make it easy to secure them by ANY ONE, at little or no cost. The quality of every article is vouched for, and one runs no risk of deception. We would like to have every reader look through the List again at this time. Read in the introduction, page 377, "Premium Giving Explained." If the copy sent in September, amid the political excitement, is lost or mislaid, another copy will be promptly sent on postal-card application.

Giving Holiday Presents is Pleasant.—A notice to a distant son, to a relative, a workman, a friend or neighbor, that you have ordered the *American Agriculturist* for him for 1881, will be to very many a most acceptable gift, and one that will be a reminder of you every time it comes all through the year.—Then there is a fine assortment and great variety of excellent things described in our Premium Sheet, most suitable for Holiday Presents. If one can not obtain them free, by means of premium clubs, they will be supplied to any of our friends at the prices named; **if** they will send in in time.

Be in Time, If for Christmas or New-Year's.—Our Friends intending to receive, either by subscription clubs, or by purchase, any of our Premium Articles for themselves, or to use as Holiday Presents, should send in ample time for the Publishers to secure them. Some articles, in unusual demand, may chance to run short in supply early in the month. Accidents, or over-crowding, or other delays in transportation, may happen to bring some desired articles along "a day after the fair," if not started early.

Did You Notice the easy method of getting, at almost *no cost*, an excellent supply of *good* Books for yourself, or for a neighborhood circulating library, etc., as offered in our Premium List? This offer embraces not only books on Agriculture, Horticulture, Gardening, Architecture, Animals, Plants, etc., but many of the best Standard Books in all departments of Literature. Any person or company of persons, by collecting and sending in ten or more subscriptions for 1881, at the regular rate of $1.50 each, can, for *each* of the ten or more names, select *one dollar's worth* of books (any ones desired) from the hundreds of volumes named in the Premium List. Please refer to that List, or send for a new copy if yours is mislaid.

☞**67 per Cent!**—As the *American Agriculturist* will surely be worth the $1.50, the books obtained under the above arrangement will be equivalent to 66⅔ cents *extra* on every dollar invested.

Union Books.—If some one will be enterprising enough to start the work, it will be an easy matter to find, in *any* neighborhood, from ten to a hundred persons who will contribute $1.50 apiece for which *each* will receive this paper a year, *and besides*, there will be $10 to $100 worth of good books, which can be kept by one of the number, and circulate among the subscribers until all have read them, and then they can be kept together for refereuce or re-reading whenever desired by any one.

Is there Any Doubt that it always *pays* to read about what *others* do and say, and think, who are in the same line of business or work as ourselves. If one does not at first get direct information specially and at once applicable to his own work, yet the thoughts and methods of others incite new thoughts and plans in the reader's own mind that lead to profitable results. The reading, thinking man, makes his head help his hands. Brains tell everywhere, and in nothing more than in farming, gardening, and housekeeping. And the fewer brains one has, or thinks he has, the more anxious should he be to get from books and papers all the facts and suggestions he can from other people's thinking and experience.

Every German Cultivator and Laborer on the Farm, or in the Garden, and every German Family not reading English, OUGHT to have the German edition of the *American Agriculturist*. It contains not only the Engravings, and all the essential reading matter of the American edition, but an additional *Special German Department*, edited by the Hon. Frederick Münch, of Missouri, a skillful and successful cultivator and excellent writer. No other German Agricultural or Horticultural Journal in America has been so long issued; no other one contains so much useful information, or a tithe of its engravings. Indeed, we recall only one other German professedly Agricultural Journal in all this country. The Germans are a reading, thinking people, and know how to make good use of what they read. Many supply this edition to their German laborers and gardeners, and all would find it pay to do so.—Nothing else can compete with it in cheapness of price for the same amount of material, engravings, etc., because the expense of providing all these is largely borne by the edition in English, and no separate office or machinery is required beyond German editors and printers. Its terms are the same as the American edition, singly and in clubs; and clubs can be composed of subscribers for either edition, or a part of both.—☞ Please call the attention of your German neighbors to this paper. It will do much to help new comers to a knowledge of the system and modes of culture used in this country.

Save the Index.—It is printed on an extra sheet, and put in loosely, so that it can be bound or stitched in

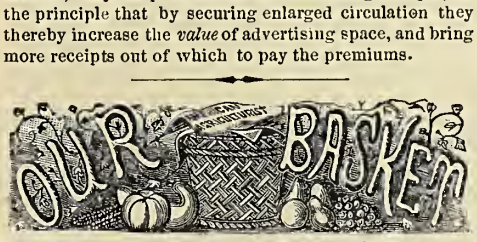
front of the year's numbers, for ready reference.—By the way, a glance at this sheet will show how great a number of topics have been talked about, and illustrated in this single volume. The next Volume will be quite as full mainly of fresh hints and suggestions, etc., with new, larger type in the body of the paper. No one, we think, will exercise wise economy if he fails to secure every number for 1881.

Bound Copies of this Volume (39) will be ready on or before Dec. 10th. They are in the uniform style, cloth, with gilt backs. Price at the office, $2. If sent by mail $2.30. We can supply, at the same rate any of the 23 previous volumes, or from volume 16 to 39 inclusive. Any *ten* or more volumes, in one lot, will be supplied at the office for $1.75 each; or be forwarded by mail or express, carriage prepaid, for $2 each.

Binding.—Sets of numbers sent to the office will be bound up in our regular style for 75 cents per volume, with 30 cents additional if to be returned by mail. Any missing numbers supplied to complete volumes at 12 cents each. The prepared covers, ready for inserting the numbers by any bookbinder, sent by mail for 50 cents each.

About Club Subscriptions and Rates, etc.—Every P. O. receiving papers, whether one or a dozen, must have a separate Book Entry, and a full wrapper and address. If three, five, or ten papers go to the *same* office, they all go under the same entry, and under one wrapper and address, with a simple slip on each giving the subscriber's name. Every added name diminishes the proportionate cost of each, for time and wrappers, throughout the year. Again: In all business; "wholesale" rates for increased quantities are lower. Lastly, the lessened cost is an inducement to subscribers themselves to enlarge the number. So, while for this Journal, with its superior printing paper, its many engravings, requiring slow careful printing and frequent washing of plates, its careful editing, and the number of experts required for accuracy where there are tens of thousands of varieties of plants, fruits, animals, insects, implements, modes of cultivation, etc., $1.50 a year is a low rate. Yet experience has shown that a scale of rates can be adopted like this: "One or two subscribers, $1.50 each, Three subscribers, $4 ($1.33 each), Four for $5, five for $6, and so on, until ten is reached, at and after which the lowest possible club rates of $1 each is adopted, and must necessarily be adhered to.—*Yet Clubs may be increased with advantage to the subscribers.* Any one forwarding a club of say four at $5, or $1.25 each, may add other names at the same rate if to begin at the same date. But when several additions are made by the same person, the whole may be reduced *to him* to the rate for a larger club. Thus, if he has sent four at $5, he can send six more for $5, that is *ten* in all, for $10.

N. B.—The above scale of rates has nothing to do with the giving of Premiums. The premiums are a separate matter; they are paid for out of advertising receipts, on the principle that by securing enlarged circulation they thereby increase the *value* of advertising space, and bring more receipts out of which to pay the premiums.



containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Distribution of Carp.—Since the publication of the illustrated article on the European Carp, in January last, we have had a multitude of inquiries as to the method of distribution of this valuable fish. Upon a recent visit to the Fulton Market, in this city, we saw, at E. G. Blackford's stand, a large tank filled with upwards of a thousand young carp, about three months old. Mr. Blackford is State Fish Commissioner, of New York, and these carp have been received by him from the United States Carp Pond at Washington, and are for gratuitous distribution throughout the State of New York, to persons having suitable waters for growing them. A pond with a muddy bottom is preferable, that there may be an abundant growth of plants during spring and summer. The carp are vegetable feeders, and should be the only fish occupying the pond. Applications for these fish are to be made to Mr. Blackford; the largest number supplied to one person is five pairs. Those who send for the Carp must provide the requisite cans for their transportation.

Exports of American Apples.—Reference is made elsewhere to the unusually large shipments of our apples to European ports. When informed a few weeks ago in Covent Garden Market that there were at that time 13,000 bbls. of American apples on sale in London, the quantity seemed so large that we feared there might be some error in the figures. Recent interviews with some of our shippers show that the figures far exceed anything we had supposed. We learn, from reliable sources, that up to Nov. 3d, 280,000 bbls. of apples had arrived at Liverpool. It was estimated that, at the above date, at least 100,000 more bbls. were on the way. That there had been received at London, Glasgow, and other ports, 200,000 more, making a total of 580,000 bbls. of apples exported up to the first week in November.

Guinea Grass.—In an account of this grass, in March, 1877, we indicated that it had become thoroughly naturalized in some of the Southern States, the result of early experiments in its cultivation. "L. A. B.," Little Rock, Ark., sends an extract from the "Memoirs of the Philadelphia Society for Promoting Agriculture," 1814, which shows that the Guinea grass was cultivated in Jefferson Co., Ky., by Jos. B. Oglesby, at that early date. Though Mr. O. is quite as enthusiastic as to the great value of this grass as are some of the present writers, claiming that it yielded "ten times as much as timothy," it does not appear to have made much progress. Both this and the Durra have been cultivated since the early part of the century, and though they are brought forward at intervals, they for some reason fail to make themselves a place among the regular farm crops. Mr. B. kindly quotes the remarks of the Editor of the "Memoirs," on the botanical relations of the grass, which shows that he knew but little about it. The accepted botanical name of the grass is *Sorghum Halepense.*

Locust Trees from Seed.—"W. S. U." Myerstown, Pa. The better way is to sow the seed in a seedbed, and transplant the young trees when one, or better two years old. Spring is the proper time; pour scalding water upon the seeds, and when cold sow them in light rich soil, dropping them 6 or 8 inches apart. Keep the bed clear of weeds during the summer.

Learning Phonography.—"W. B. W." The fact that Mr. Chaffee, of Oswego, N. Y., has an advertisement in our columns shows that we have been satisfied that he will do what he proposes. That he can surely teach you or any other person to become an accomplished phonographer, does not depend upon the teacher alone. The scholar is an important factor in that problem. Your best course is to correspond with him rather than with us.

History of the Mass. Horticultural Society, 1829-1878.—Boston: Published by the Society. This handsome volume of nearly 550 pages, while full of local interest, has a value to every horticulturist in the country. Being, with the exception of that of Pennsylvania, the oldest society of its kind, its history must be in good part the history of American horticulture. Perhaps the most valuable portion of the work is the sketch of the History of Horticulture in the United States, previous to the founding of the Society, which brings together much concerning our early history that will interest those who are not horticulturists. Though his name does not appear upon the title page, the completeness of the work is due to its Editor, Robert Manning, the present Secretary of the Society, who possesses the industry and appreciation of the necessity for accuracy that eminently fit him for the task. A portrait of the first President, Gen. H. A. S. Dearborn, and views of the present and former halls of the Society embellish the volume. The work was published by subscription of the members of the Society, but we learn that the Secretary can supply a limited number to others at $3 each.

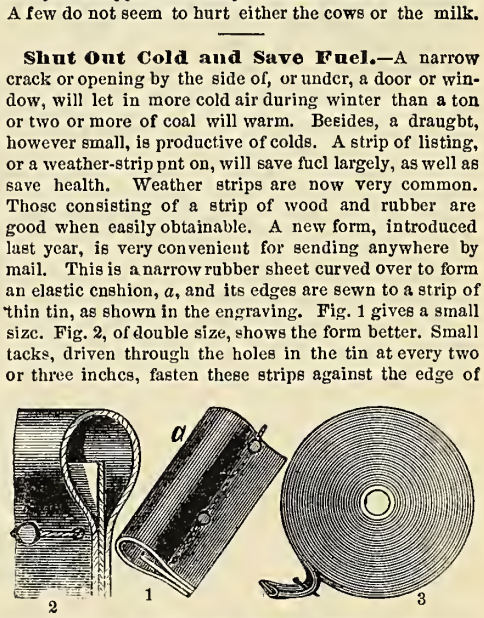
Barrel Cart Again.—"R. C. J.," Opelika, Ala., writes: "I was interested in your cart shown in the Oct. No., for hauling barrels and tubs of slops for hogs and cattle. I have one which I have been using since 1860, which I think is much more convenient and cheaper. I use a pair of buggy wheels, with the axle shortened, so as to barely let a barrel, set on end, pass between the wheels. I then fasten the shafts to the axle, letting them extend beyond it far enough to pass under an iron pivot on each side of the barrel. The pivots rest in a notch on each shaft near the end, so that when pressure is applied to the long ends of the shafts, the barrel will be raised up and still keep perpendicular. One of the great advantages of such a cart is, that it can be so easily attached to different tubs or barrels. The length of the shafts is in proportion to the size or strength of the man or boy who is to use it."

Millet for Name.—"J. O. K.," Kearney, Neb. The specimens appear to be of that variety of Hungarian Millet which was introduced a few years ago as "Golden Millet." It has been tested to some extent as an annual grass, and has been highly spoken of as giving a heavy crop of hay, which, though coarse, is much relished by farm animals. It is cut soon after flowering, and long before the small, globular grain matures. The seed is produced in great abundance, and affords food for poultry and pigs. Horses are fond of the grain, but we should not feed it to them, as the rough bristles that accompany the grains have sometimes been injurious.

Keeping Peas and Beans.—"S. A. C.," Milledgeville, Ga., writes: "I have observed from time to time complaints of the difficulty of preserving peas and beans from the weevil, particularly in the South. Your subscriber, several years ago, found an effectual means, and I give it for the benefit of those desiring to keep their peas and beans free from weevil. Harvest and dry the seeds thoroughly in the sun, and then place them in jars, cans, or barrels, which have been heated before the fire, deposit in the vessel a bottle of turpentine, not corked, but simply closed with a piece of cloth. Expose the vessel now and then to the sun, keeping it closed as near air tight as possible. The fumes of the turpentine kill the larvæ of the weevil that have hatched from eggs deposited when the seeds were green."

Apples and Milch Cows.—Sweet apples do not hurt milch cows, unless fed in too large quantities. Many sour apples certainly decrease the flow of milk. A few do not seem to hurt either the cows or the milk.

Shut Out Cold and Save Fuel.—A narrow crack or opening by the side of, or under, a door or window, will let in more cold air during winter than a ton or two or more of coal will warm. Besides, a draught, however small, is productive of colds. A strip of listing, or a weather-strip put on, will save fuel largely, as well as save health. Weather strips are now very common. Those consisting of a strip of wood and rubber are good when easily obtainable. A new form, introduced last year, is very convenient for sending anywhere by mail. This is a narrow rubber sheet curved over to form an elastic cushion, *a*, and its edges are sewn to a strip of thin tin, as shown in the engraving. Fig. 1 gives a small size. Fig. 2, of double size, shows the form better. Small tacks, driven through the holes in the tin at every two or three inches, fasten these strips against the edge of



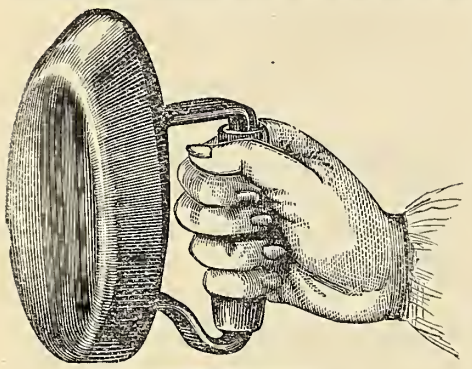
a door or sash. The elastic rubber cushion, *a*, closes the opening, but allows the sash to be raised or lowered. It comes in lengths of 25 and 50 feet, coiled as shown at the right-hand, figure 3, so that it can be mailed at a cost of half a cent per foot on pre-payment of postage. The price is about 5 cents a foot, or 5½ cents, if sent by mail. Our readers who cannot obtain it elsewhere, may send to this Office, and we will procure and forward what they may desire, in even lengths of 25 or 50 feet, at the above prices. This is for the best half-inch-wide kind. There is a cheaper kind, which may answer for temporary use a season or two, supplied at one cent less per foot. The size shown in fig. 1, answers for both doors and windows. A narrower strip that will answer for windows, costs 4 cents per foot, or 4½ cents if sent by mail.

"Curious Plant."—"D. D. R.," Polk Co., Minn., writes: "Enclosed find seed and fibre of a curious plant found here. It grows about three feet high, and has several bulbs resembling those of the cotton plant, and has a good handful of fibre in each bulb. What is it? When found they had burst open and the cotton was protruding. Only three stalks have been found, and they were among bushes under the trees, and were probably some chance dropping of the birds."—The seed and fibre is that of the Common Milkweed (*Asclepias Cornuti*). This is a common plant in rich ground almost everywhere, and is counted a troublesome weed in some localities, and one exceedingly difficult to eradicate. The flat seeds, contained in large pods, are provided with a copious tuft of silky hairs, which serve with the aid of the wind, to distribute them. The "fibre" has no textile value.

Lucern or Alfalfa.—"A. L. F." asks if it can be grown in New England. We know that it is cultivated with success near Boston, where the winters are quite severe. The seed is kept by all the seedsmen.

The Death of R. F. Johnstone, Editor of the *Michigan Farmer*, took place in Detroit, on the 24th of October last. Mr. J., a native of Ireland, came to this country in his youth, and for the last thirty years had been an active promoter of the agricultural interests of Michigan, both as an Editor and as Secretary of the State Agricultural Society.

Shirt Bosoms and Collars.—We are again asked how they are done up at the laundries, as they have so much better polish than can be produced at home. We looked up the matter several years ago, and learned from the proprietor of a large laundry that the polish was entirely due to hard rubbing with a "polishing iron." This iron is shaped like a common flat-iron, but without corners, as shown in the engraving here given, and it has a smooth and very brightly polished steel face. Such polishing irons can be had at the city



A POLISHING IRON.

furnishing stores. The linen is starched in the usual way and ironed. Some use a little gum arabic, others spermaceti, and others nothing. The ironed bosoms and collars have a damp cloth passed over them and are then polished by the use of the iron mentioned, the ironer bearing on hard and rubbing the surface of the linen rapidly.

Black Walnut Stain.—A few years ago we gave directions for staining pine or other white wood a brown color, somewhat like black walnut, by the use of umber. We have since found a much better method. Dissolve an ounce of Catechu in a quart of boiling water, adding a lump of Sal-Soda the size of a hickory nut. Dissolve an ounce of Bichromate of Potash in another quart of Water. The articles are not expensive, and may be had at any drug store. To stain the wood-work, first paint it over with the solution of Catechu and allow it to dry; then go over it with the solution of Bichromate. When thoroughly dry a coat of Shellac or other varnish will bring out the grain of the wood. The solutions may be made stronger or weaker according to the depth of color desired. Picture frames, book-cases, and work made with the scroll-saw from very common material, may be thus treated with most satisfactory results.

Look Out for the Water Pipes.—A friend who at much expense introduced water into his country house remarked to us, "Ever since I have had water I have had trouble." Unless a house is warmed throughout there should be provision for shutting off the supply and letting out the water which remains in the pipes. The waste pipes also need looking to, for whenever water freezes in a pipe there will surely be a leak. Where water pipes are in daily use there is seldom much danger of freezing except during the night. Such pipes, where exposed, should be protected by wrapping with old carpet or encased by a box which may be filled with leaves. If circumstances admit of it the water may be allowed to run slowly during cold nights. Rats often cause much trouble by gnawing lead pipes Some say that this is to get at the water, but others claim that it is merely rat-nature to gnaw whatever will yield to their teeth. Whatever may be the reason for this gnawing, it should be kept in mind as something likely to occur.

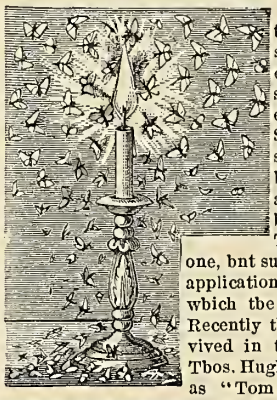
Chilblains.—It is not necessary that the feet should be actually frozen to produce chilblains. Children often suffer intensely from this cause; after playing out doors in the snow and getting their feet very cold they come into the house and warm their feet by the fire. These sudden changes produce an unhealthy condition of the skin of the feet, the proper circulation is interfered with, and there is intense itching and burning. The following was a popular chilblain lotion some years ago: Sal-Ammoniac ½ oz., Water 1 gill, Alcohol ½ gill, and Muriatic Acid 1 dram. We have seen the application of Kerosene highly commended for painful chilblains, but have not had occasion to try it.

Lime for Fertilizing.—"A subscriber of many years standing" asks: "In applying Lime to land for fertilizing purposes, is it best to use it in the caustic state, or after it has been slaked with water?"—As lime comes from the kiln it is known as caustic or quick lime, the heat having expelled the carbonic acid gas of the carbonate of lime, or limestone. By exposure to the air, and moisture, water and carbonic acid gas are absorbed, and the caustic lime returns to the carbonate. While this change is going on the lime has the power of decomposing vegetable matter, and setting the elements of plant food free: this is the chief value of lime when applied to a soil. It is therefore clear that the larger the per cent of the lime that is in the caustic state, the more efficient it is, and the quicker the lime is applied after burning, the better. Lime is largely a secondary fertilizer.

"Tom Brown," and the New Rugby.—Probably no work for young men has been more generally read on both sides of the Atlantic than "Tom Brown at Rugby," in which the author, Thomas Hughes, gives an account of his life at the celebrated English school at Rugby. The author, now a member of Parliament, is greatly interested in the welfare of his countrymen, and identified with coöperation and other schemes for the benefit of working people. He hopes to benefit farmers by aiding a portion of them to leave England and go where there is more room and land is readily acquired. As the head of a company for this object, Mr. Hughes has recently been in this country to establish a colony on the table lands of Tennessee, which is now fairly started and is called Rugby after the English town. We regret that we were unable to accept an invitation to attend "the opening of the town site" which took place on the 5th of October last. The chief feature of the exercises was a most sensible address by Mr. Hughes himself. Though started for the benefit of colonists from England, others are not excluded if they will accept the conditions of admission. The enterprise is in no sense a charity; the title "Board of Aid to Land Ownership," indicates its object, which is to assist those who have some means to invest them in the best manner. The Post Office address of the new settlement in Rugby, Morgan Co., Tenn.

Sweet Corn—Quick Returns.—"W. F. W.," Bridgeton, N. J., writes: "I had for dinner last week some sweet corn, which grew from seed that was raised this year. It was of the excellent 'Early Minnesota' variety, the first planting of which was on the sixth of April; the seed from this first crop was planted and gave the supply referred to."—We have long regarded the "Early Minnesota" as one of the best of the very early varieties of sweet corn, which does not appear to be as generally known as its merits deserve, and we shall be glad if this double crop of "W. F. W." serves to call attention of lovers of Sweet Corn to this excellent variety.

Sundry Humbugs.



In England coöperation and coöperative stores have been long enough established to show that they are most excellent institutions. Similar stores have been started in this country, but from one cause or another they have not been so successful. The principle is a good one, but success depends upon its application and the manner in which the details are carried out. Recently the matter has been revived in this country, and Mr. Thos. Hughes, M.P. (better known as "Tom Brown of Rugby"), on the eve of sailing for home last month, gave a public address in New York City on Coöperation. It is likely that coöperation will now take a new start and, avoiding former mistakes, stores will be established at which those who coöperate may make a considerable saving. There is nothing so beneficient but it may be turned to bad uses, and there is no place in the country where new schemes of fraud are hatched more rapidly than at Cincinnati, Ohio. No sooner is coöperation revived than there comes from Cincinnati, O., the prospectus of a

"CO-OPERATIVE COMMERCIAL AGENCY."

This concern mails circulars to perfect strangers, asking them to act as agents! One circular says: "Your duties will be to make reports when called upon, to collect accounts and negotiate loans." But before one can be qualified to do this, he must subscribe to the "Commercial Reporter," price $2 a year, "invariably in advance," and it is also very desirable that the agent aforesaid should send $2.50 for a tin sign, in order that signs may be "*uniform*" you know. In all $4.50 to start in the business of coöperating. As a bait the following is hung out: "We may (if you become our agent) be in a position to serve you *personally* upon advantageous terms with any loan your business may require, or secure you a *partner* with money, or sell your property for you, and grant you many other favors." When we would learn who is to do all this, we find that it is

"RESPECTFULLY, CO-OPERATIVE COMMERCIAL AGENCY."

If we would know where to find the "Agency," we look carefully over the various circulars; while these are very full on the subject of tin signs at $2.50 each, we find that no other address is given than "Cincinnati, O." —Here is a concern, which claims to have a capital of "Two Hundred Thousand Dollars," without a local habitation! As we look back at Cincinnati, we see in memory looming up through the dim past a "Secret Service Company," that required that "detectives" should subscribe to a $2 paper—but we do not remember any $2.50 tin sign. This coöperation business will not coöperate any better than the "Secret Service," served. Common-sense people keep shy of all unusual ways of doing business.....The Boston papers have of late been much concerned over

"THE LADIES' DEPOSIT,"

which, whether it prove a fraud or not, may properly be placed under the unusual—very unusual methods of doing business. The papers are filled with column after column of fine print, all relating to this concern, which appears to have completely baffled all attempts at investigation. The office, in a richly furnished house, is managed entirely by women; single women, widows, or wives with invalid husbands can do business there. Deposits of not less than $200 or more than $1,000, are received, on which interest in advance is paid at the rate of *eight per cent monthly*. If any depositor wishes to withdraw, her money is paid at once, and she can do no more business at that shop. The parties concerned are not known to keep any bank account, and the whole is surrounded by mystery of the densest kind. Of course, Bostonians are most curious to know what kind of business it is that can afford to pay 96 cents for the use of a dollar for a year. The general impression appears to be that, at some time when the deposits are most abundant, the thing will suddenly stop, but it is merely a conjecture. The Boston papers, their reporters and interviewers have for once met their match in the three women who manage "The Ladies Deposit." .. Several have written about

SPECULATIONS OR COMBINATIONS IN OATS,

which have been going on for several years, particularly in Ohio. The oats in question are the "Hulless," or "Bohemian Hulless Oats," which are claimed to be a new variety that will yield 40 to 60 bushels to the acre and weigh 50 lbs. to the bushel. It is represented that there will be a great demand for these oats for seed, and "Associations" are formed to supply them. The members of the "Association" agree to take five or more bushels of the oats at $10 the bushel, and sign an agreement not to sell for seed at less than that price, or in quantities less than five bushels. The projectors of the scheme vary the matter in different localities, but in all cases the farmer agrees to do certain things while the other party agrees to do nothing. In some cases the farmers gave notes (of course some people always *will* give notes), which were sold as soon as possible. A number of farmers in Medina Co., O., joined one of these "Associations," some of them finding it very difficult to raise the money to buy the seed at $10 the bushel. Now that the harvest is over they find that the yield ranged from 6 to 20 bushels to the acre, of oats weighing about 40 lbs. to the bushel. Having this crop they are puzzled as to what to do with it. They have agreed not to sell at less than $10 per bushel, but they do not find that any one has agreed to pay that or any other price. Our correspondent asks, 1st, "If these parties have exclusive control of the seed in the U. S.?" 2d, "If the oats have been tested and found profitable?" 3d, "What do you think of this manner of doing business?"—These are very sensible questions, but are put rather late. If those persons who have these high priced oats on hand had exercised ordinary caution, they could have learned that

HULLESS OR SKINLESS OATS,

(Bohemian being put on for "grandeur"), have been known in this country for 30 years, to our knowledge, and probably much longer. So far from these parties having "exclusive control of the seeds," the oats may be had from the N. Y. seedsmen at a fourth the price the Ohio people paid. The oats have been tested many times, and have been found to deteriorate so in our climate, that no one has continued to cultivate them. As to this method of doing business, we think it a most profitable one for one party—the one that sells the oats. It is a curious fact that these Hulless Oats have come to the front every now and then for these last 20 years, and always connected with some such one-sided transaction.

THE SPRING-BED CHAPS GOING SOUTH.

The spring-bed swindlers have heretofore operated in New England, but we now hear of them in New Jersey. A young man writes that a couple of these fellows induced his father to take the agency of the spring-beds, He was to take 18 beds, pay $4 each, and sell them for $10, and he "signed an agreement" to that effect. In about two months another came along with the paper, which turned out to be an agreement to pay $10 each instead of $4. The holder of this paper, by threats of law, etc., actually "scared" the father into giving a note for the whole amount, $180 1 The son now writes us, asking if this note can be collected. We do not profess to give legal advice. We should judge, however, that

the case would depend on the evidence of fraud that may be presented at the trial, and how much of threatening was used to obtain the note. As a general rule such notes are collectable, if the parties who bought them of the swindlers, were themselves acting in good faith, without any collusion, paying their money for what they had every reason to believe were good notes. The makers of the notes should not have given out such notes. How often have we written,

"FARMERS, SIGN NOTHING FOR STRANGERS,"

no agreement, not even your address, if it goes into the hands of a stranger?....It is a long while since we heard of the "Powder to Prevent Lamp Explosions." It has been so thoroughly exposed that we supposed it to be quite dead. Here is a letter from Oregon, the writer of which asks where the Powder can be procured, as he wishes some. Years ago this was a very successful humbug. The peddler went from house to house, showing that when this powder was mixed with kerosene, he could thrust a lighted match into it, and the oil would not explode, and other such tricks. Not being aware of the fact that *oil* never explodes, but that it is the vapor of the oil that is dangerous, many have been deceived by these tricks, and supposed that the powder prevented an explosion. After a while a chap appeared, whose Powder not only prevented the lamp from exploding, but would also prevent the chimneys from breaking. A few years ago we procured some of this wonderful Powder, which, on examination, proved to be only

COMMON SALT COLORED BLUE,

which could have no more effect upon the oil than the same quantity of sand.... There has, of late, been a great dearth of new medicines, and a new one comes as a surprise, especially when it is "The only known Remedy for the Cure of Rupture"—which is claimed to be "as certain a specific in this dangerous and distressing affliction as Quinine in Malaria." Rupture is a mechanical trouble, which can no more be treated by medicine than can an in-grown toe-nail, and the thing need only to be mentioned to show its absurdity.....For several months we had heard nothing of the Battery business, but just now there come several inquiries concerning them. To these we reply in brief: We have examined all of these so-called "batteries" that have been extensively advertised. They are disks of the size of a half-dollar or smaller, made up of bits of different metals, and are intended to be worn next the skin, over the heart, etc., and great are the virtues claimed for them. We have not seen one of these that did not show

THE MOST UTTER IGNORANCE

of every law of electricity. It would be absolutely impossible for these to produce any electrical effect upon the body. Whatever cures they may have effected are entirely due to the imagination. As much benefit would result from the wearing of a leather medal, or carrying a horse-chestnut in the pocket, as some persons do to keep away rheumatism....For the information of new readers we must add that we know nothing about any

DOCTORS WHO ADVERTISE THEIR CURES.

New York is a large town, and there is no better place for one to hide in than a great city. A great many obscure chaps advertise in distant papers of the wonderful cures done at their infirmary, hospital, or sometimes even "university" in New York, and propose to send out medicine to cure people at a distance. We are often asked about such "doctors." As a general thing they are quite unknown here and do their business through the mails. Our invariable advice is, to have nothing to do with one who advertises his cures or proposes to undertake a case without seeing the patient. The whole crew are unreliable quacks.

P. S.—Since the above relating to the Boston "Ladies Deposit" was in type, we have learned that a similar concern has been operating in New York as the "Ladies Mining and Stock Exchange." It proposed to receive deposits, use them in stock operations and return the depositor half the profits on the investment, and to always return the investment whether it made or lost. Like the Boston affair this was quite too good to last, and one bright morning early in November, Mrs. M. E. Warren & Co. did not open their "Exchange." Callers found a sign stating that "This office will not be open until Wednesday next at 10 A.M." On Wednesday there was a large crowd of depositors, but no Mrs. Warren, who appears to have "gone where the woodbine twineth." Every sensible person knows that all unusual, unbusiness methods of making money must always end in a collapse.

Fowls for Eggs.—"P. E. M.," Columbus, Ohio. Light Brahmas hold on laying in very cold weather, perhaps better than White Leghorns, but on the whole Leghorns are the cheapest and best fowls for you to buy for eggs only. Do not think of hiring an acre of ground two or three miles away. It would be running great risks—you need to live close to your fowls. Begin on a small scale, and let the business grow with your knowledge of it, and with its own profit to a considerable extent. Start with a dozen hens and one cock; nothing fancy—good healthy birds that look as if they might be pure White Leghorns, but be sure that the cock is pure. In a few weeks, if these do well, start another flock, but keep them apart. It may cost $50 to $75 to start in the way suggested, and within a year you will have gained experience to guide your future operations.

Charcoal as a Fertilizer.—"O. J. M.," Pennville, Ind., writes: "Is charcoal a good fertilizer on clay soil? If not strictly a fertilizer, is it of any advantage? I have some old fields and a plenty of wood and could produce charcoal cheaply."—Charcoal is composed almost entirely of carbon, is insoluble, nearly indestructible, though it may serve as an absorbent, is not in itself in any sense a *fertilizer*. When applied to heavy clay soil the mechanical effect of charcoal may be of value in making the soil more porous; but this end can be obtained by using sawdust, straw, and other coarse litter, much more readily than by converting wood into charcoal for this purpose. If the wood is to be disposed of, the quickest and best method to make it available as a fertilizer is, to burn it and spread the ashes upon the soil.

A Kicking Horse.—Mr. "T. M. C.," Duchess Co., N. Y., sends sketches and descriptions of a method

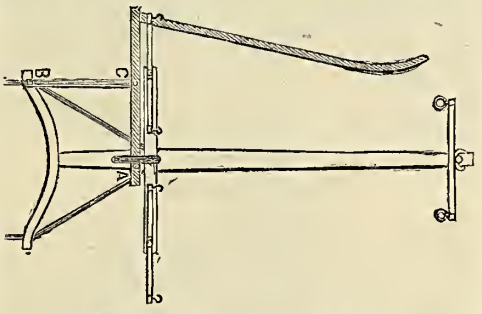


Fig. 1.—ARRAGEMENT OF PARTS.

of hitching a kicking horse to a double wagon. Fig. 1, shows the arrangement of the parts of the "frame" into which the "kicker" is fastened. A piece of wood *A*, *C*, 2 by 2 inches is made to fit behind the whiffletree and reach out as far as the outer trace. A brace, *B*, *C*, runs back from the middle of this, to the tongue bar. The kicking horse is placed inside the thills and harnessed in securely. It does not take long for the horse to give up his bad habit when thus fastened down. A thill is bolted to this end. The arrangement of the frame is shown in larger view in fig. 2.

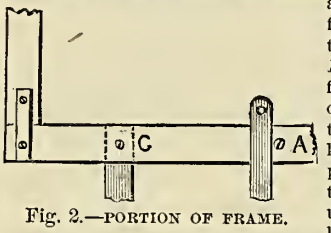


Fig. 2.—PORTION OF FRAME.

A Heavy Clay Soil.—"W. H. M.," Mount Clemens, Michigan, writes: "I have a piece of heavy clay soil. What shall I use to make it more mellow? Are ashes good on clay or should I use lime?"—Ashes are very good, if you have plenty; they will probably mellow up the surface, so that you can plow in a crop of clover, which will help matters very much. Your soil probably needs thorough draining more than either ashes or lime.

Sorghum Seed, Etc.—"G. W. K.," Washington, D. C.—The seed of most grasses (and Sorghum is a grass) is highly nutritious. Its value depends upon the time at which it was cut, the degree of ripeness, etc. If sound, the seed may be ground and fed to any farm stock. The leaves of the sorghum, if not frozen and dried out so that they become unpalatable, are good food for horses and cows. So is the begasse, or cane, after it is ground, provided it has not soured and heated.

How to Treat Manure.—"Agricola," of Massac Co., Ill., writes: "I would like to understand more fully the action of water upon the manure and litter taken from the stable and cow-shed. Should it be exposed to the rain, freezing and thawing of winter, or sheltered until spring? Would it have time to rot after the freezing weather sets in, and be in time for use on the corn-field?"—It would be much better to have the manure piled up under a shed, than exposed to the weather. Manure, to keep well, must be either packed by treading to exclude the air, or kept so moist that fermentation will not become violent and burn (fire fang) the heap. If exposed to rain and water much of value leaches out, and is lost. If kept under cover, there should be a tank at the lowest point, covered with rails, or a grating where liquids can settle, and be pumped up over the heap again. Add fresh water, if necessary, to secure moisture enough to prevent burning. Such manure is in good condition in spring. The corn crop does not require rotted manure.

Leached Ashes or Horse Manure.—"A Reader," of Tiffin, O., is in a great quandary. "Which is the cheaper," he asks, "strawy horse manure at 25c. per load or leached ashes at 10c. per load? Will it pay to draw either, making two loads a day when the teams have nothing else to do?"—The price paid has very little to do with the question. It is one of hauling. The horse manure can hardly be worth less than $2 a load, and the ashes certainly 6c. a bushel. A load would probably be 40 bushels, which would be $2.40. In one case the team would earn $4, in the other $4.80. The ashes would be best applied to grass and potatoes. The horse manure to corn or wheat.

About the "Dentaphone."—Two strong complaints, and many letters of inquiry, lead us to say: As there are certain nerves leading from the teeth to the ear, it is frequently the case, that in certain forms of deafness one's hearing may be improved by holding between the teeth a broad plate of some kind that will receive on a wide surface the vibrations of sound from the air. Some time since we received, from a firm in Cincinnati, an instrument arranged for this purpose. It was submitted to a scientific physician, who made several tests with it, and reported in its favor. Upon this report, and the further testimony of some good men whom we know, that it had proved useful, we admitted to our columns an advertisement of it, which had been kept out until investigated. Several inquiries seemed to establish the fact that the company advertising them were no myths, but a sound company, who would fulfil their engagements with the public.—Thus much for the present. Two of our subscribers who bought the instrument report that it is wholly useless to them. An expert in this city tells us that it proves useful in some cases certainly, but that in many others it does not—that it is useful only in certain cases of deafness, and no one can himself tell in advance whether it will be valuable or not. In this condition of affairs, we cannot advise any one to purchase one except upon the express condition that it is to be tried, and, if found useful, paid for, and if not, to be returned. That is the only condition on which *we* would take one. We also think the company should either redeem the instruments sold when proving entirely useless, or replace them with some form that will be serviceable.

"Osier, or Basket Willow."—Every now and then we have inquiry as to the cultivation of the "Osier, or Basket Willow," and the probable profits of the crop, a writer sometimes adding that he has a muck swamp especially suited to its growth. It is a very common impression that there is but one Basket Willow, and that is the Osier. The fact is that the common Osier is the poorest of all the Willows, and is only useful for making coarse, heavy work, such as hampers, market baskets, etc. In England and other countries the choice willows are known by local names, such as Whip-cord, Rose Willow, French Willow, etc., and it is these varieties that are used for fine work, such as ladies' baskets, etc. It is a mistake to suppose that willows require a wet, swampy locality. The best basket willows are grown upon good grain land. Another error is, that the basket willows are of dwarf kinds—some of them are large trees, but when cultivated for basket work they are annually cut back to the ground, as only straight rods of one season's growth are of use. As we have before stated, the willow business in this country is in the hands of foreigners, who will not buy American-grown stock at any price. There is no difficulty in growing as good willows in this country as are produced anywhere, but there is no regular market for them. The produce commission merchants manage to get rid of a few willows grown in this country, but they are slow of sale.

Notes on Blue Grass.—In an article in September last, Prof. Gray expressed a doubt that the Blue Grass (*Poa pratensis*) was really indigenous so far South as Kentucky. This has called out several notes from friends in Kentucky and Ohio, who claim that the grass must be a native there. "S. C., Jr.," Louisville, Kentucky, thinks the readiness with which the grass takes possession of the soil, "rooting out all other kinds of grass," is proof that it is native. This is, to us, the strongest evidence that it is a foreigner. As the aboriginal man receded before the intruding white man, in a similar manner do plants give way to foreigners. The Wild Oat that covers the hills of California to such an extent, is a European species that has crowded out all native growth, and the same may be said of the Bermuda Grass in some of the Southern States. Mr. C. states that the reason for calling this beautifully green grass Blue Grass, is on account of its peculiar blue color when in bloom, at which time he says the appearance of the grass is most charming.

(*Basket Items continued on page 525.*)

Keeping One Horse—Prizes Offered.

There are vastly more persons who own and keep a single horse than there are those who have a larger number. When there is but one horse, it is most frequently kept and cared for by the owner. The horse may be merely for the use of the family; it may be for the cultivation of a garden or small farm; it may be the means by which a physician visits his patients, or that by which the grocer or other tradesman serves his customers—in all these and a great number of other cases, the animal is more likely than not to be in the care of one who has had no previous experience with a horse—indeed, knows nothing about the matter, beyond the fact that the animal must eat, but when it "gets off its feed," or any of the troubles to which horse-flesh is subject come to his animal is utterly at loss as to what should be done.

In view of the fact that plain and practical directions for the proper treatment of the horse would be useful, the publishers of the *American Agriculturist* offer

Prizes for Essays on Keeping One Horse.

The Essay need not treat upon the kinds of horses, or the buying of a horse, but assuming that the animal is already in possession, it should cover the whole matter of *keeping*. This includes proper stabling; food, its kinds, how to buy, store and feed; grooming, and whatever relates to the care of the exterior of the horse, including shoeing. The Essay should also recognize and show how to avoid, as well as how to treat, the commoner ailments of the horse, such as coughs, worms, colic, etc. Also, the more frequent external troubles, such as grease or soratches, galls of saddle or collar: the hoof difficulties from bad shoeing—in fact, whatever may be properly treated by the owner, without calling in a veterinary surgeon.

The scope and object of the Essay may be indicated thus: Given a young and healthy horse in the hands of a fairly intelligent owner, how is that owner to so keep and treat the horse, in order that it may continue to give him the longest term of useful service at the least expense. The Essays are to be legibly written on one side of the paper only, in black or dark ink (not in red or very pale blue ink, or in pencil), and should not exceed 6,000 words, which is equal to about two pages of the *American Agriculturist* in this type). Sketches for engravings may be sent, if it is desirable to illustrate the stable, or any other points in the Essay.

Cash Prizes.

For the Best Essay	$50 00
For the Second Best Essay	25 00
For the Third Best Essay	15 00

The Essays to be sent to the *Editors* of the *American Agriculturist* on or before February 1, 1881, in a sealed envelope (not a roll), with a motto or assumed name, and an accompanying envelope addressed with the motto or assumed name, and containing the real name and address of the writer. The prizes will be awarded by a committee of competent and impartial judges. All Essays submitted for these prizes to become the property of the *American Agriculturist*.

The Norwegian "Ski," or Snow-Shoe.

One of our subscribers, "M. O. E.," a Norwegian by birth, now living at Norwegian Grove, Minn., sends sketches and a description of the snow-shoes in use in Norway, which are quite unlike those

Fig. 1.—SIDE VIEW OF THE NORWEGIAN SNOW-SHOE.

made by our northern Indians, and copied by the Canadians and others. They are made of straight-grained Ash, or Oak, about ¾ of an inch thick under the foot, and taper to ⅜ of an inch behind, and ¼ of an inch at front. The shoe is given in side view in figure 1, and figure 2 shows the shoe as

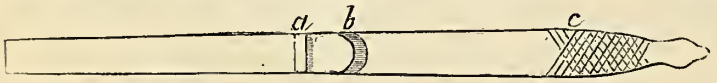


Fig. 2.—THE SNOW-SHOE AS SEEN FROM ABOVE.

looked at from above. The length is 9 feet, and the width is 2½ inches at the heel, and enlarged to 3½ inches at the point, where the toe turns up. A small block, *a*, in both engravings, an inch wide and half an inch high, is fastened to the shoe by two screws. This is for the heel to rest against, and to keep the foot from slipping back. At *b* is a strap of strong leather, to hold the foot, and should be of a proper length and distance from the block to fit the foot. It is fastened to the edge of the shoe at each side with screws; it is better to have a piece of tin, with holes punched for the screws, to go over the ends of the strap, as this will prevent the leather from tearing away from the screws. To make the bend at the toe shown in figure 1, scores are cut with a sharp-pointed knife, as shown at *c*, figure 2. In order to make the shoe run straight, a groove is made the whole length of the shoe upon the under side, as shown in section at figure 3. When the shoe is ready to bend, it is smeared with grease on both sides of the part to be bent, and held to the fire, and made very hot; they are then brought to the proper shape by bending upon a log of the proper size, and bound or otherwise fastened in that position for 24 hours. Our correspondent says that in old times these shoes were worn in his country even by the soldiers, who had the right one made about two feet shorter than the left, to allow of making short, quick turns. He says that while beginners may meet with falls, a little practice will make it easy to use them, and that they will be found greatly superior to the Indian snow-shoes, and thinks that the boys will find great fun in sliding down hill, and over snow-drifts, in a manner that would not be possible with the others. The Norwegian name for these is "Ski," and we agree with him that to distinguish them from other snow-shoes, the same name would be best here.

Fig. 3.

Clean Grass Land.

The great majority of meadows, in the older States, are more or less foul with "plants out of place," yarrow, white-weed, thistles, John's-wort, dock, and other unclean herbage. Next after clean tillage, the remedy for these unclean fields is pure grass seed. Designed adulterations in grass seed are probably rare, yet most of the seed sold in our large markets is not entirely clean. Some of it is very foul, and inflicts great damage upon the farmers who purchase it. It adds to the cost of every crop cultivated upon the ground where it is sown for many years afterward. We are glad to notice, in our visits among farmers this present season, that they are taking the remedy for this nuisance into their own hands, and are growing their own seed. However ready a man may be to send foul seed to market, he is not likely to cheat himself, in growing it for his own use. It is not a very difficult thing to clean the half-acre patch, or less, reserved for seed, of all foreign plants, so that the farmer may know that he has pure timothy, red top, or clover seed for his own use. He also has the satisfaction of knowing that the seed is of the previous year's growth, and is very sure to spring up under favorable conditions. The complaint of foul seed is very general, and the proofs of its use, in past years, are abundant on the great majority of farms. It is a rare exception to find a farmer who is thoroughly conscientious in keeping a clean farm, and in raising clean seed for market. Wholesale dealers have the means of detecting foul seed, and of keeping them out of the market, but there is a lack of conscience in trade, as well as upon the farm, and much hay seed, mixed with the seeds of weeds, is sold every year. In the present state of the market it is altogether safest, and cheapest, for the farmer to raise his own grass seed. He is sure then to begin right in stocking his grass land. If he will take a little time, every season, to pull every scattering weed that he may find in his meadows, before, and after mowing, he will be sure to have absolutely clean grass land, which is as profitable as it is beautiful.

To Wash Flannels without Shrinking.—First have soft water for the whole process, made so artificially if necessary, and next have good soap, or that which does not contain rosin. Our best soaps are safe for this purpose. You may wash and rinse entirely in cold water if you choose, but if you wash in warm water you must not rinse in cold. It is decidedly best to use only warm water all through, the rinsing water warmer than the suds, if there is any difference. It is best to make a good, strong, *clean* suds (that is, don't wash the nice white flannels in a dirty suds with other clothes that are to be boiled), and put the flannels in it, instead of rubbing soap into the cloth. Hand rubbing tends to full and shrink flannel, as it mats and interlaces the delicate fibres.

A Simple Portable Fence.

There are many places on the farm, and especially about the barns, where a few lengths of portable

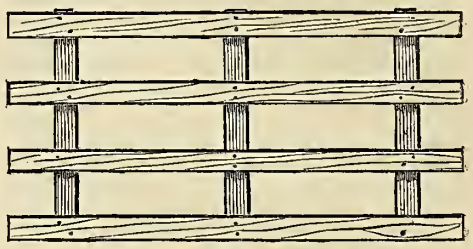


Fig. 1.—FORM OF SINGLE HURDLE.

fence are a great convenience. It may be that an inclosure is needed for some sheep, or a pen is required for a calf, etc. In such cases a hurdle fence of some kind, one that may be cheaply and easily made, and that, when not in use, can be packed away in small compass, is an important part of the outfit of a farm. The accompanying engravings show a simple fence of this kind. Figure 1 gives the form of a single hurdle, or length, made of four strips of inch board, twelve feet long, and of a width depending upon the purpose for which it is to be employed; a fence for small stock will need wider boards than for turning large animals. The perpendicular pieces are three in number, the outer ones set far enough back from the ends to allow the supporting posts, fig. 2, to take the position shown in figure 3. The next to the upper strip rests in the crotch of

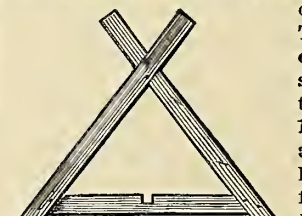


Fig. 2.—THE POSTS.

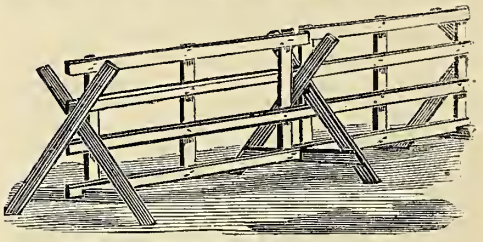


Fig. 3.—THE FENCE COMPLETE.

the posts, while the bottom strip fits into a notch in the cross-piece, near the feet of the posts, thus making the fence firm and secure. The hurdles and supports, with the manner of setting up the fence, can be understood from the engravings.

"Eurotas'" Wonderful Butter Record.

We have no authoritative system of testing the butter or milk yield of cows. If a horse is vaunted as trotting in less than "2:20" the claim is disregarded unless it has been done "in public." He has no record unless a public one. We may believe the statement or not, according to our knowledge of "the man who held a watch on him." With cows it is different. They have, and at present can have, no public record. The two butter cows which are above all others famous in this country really live public lives—everybody interested knows or may know almost everything about them. As trials go along they are reported in the papers, the butter is shown and seen, and the cows have numerous visitors. Prying and inquisitive

some are, no doubt, and if a suspicion of unfairness had been breathed, every one would have known it.

"Eurotas" has just closed her year, and presented her owner a beautiful solid-colored heifer calf, by the "Duke of Scituate," son of "Jersey Belle of Scituate," thus crossing those two famous strains of blood as near to the fountains as possible.

"Eurotas" calved October 31, 1879, and again November 4, 1880. All the milk was weighed, set, skimmed, the cream churned, and the butter weighed from the 10th day of November to the 15th day of October, being 341 days. From the figures furnished we have calculated approximately the daily yield both of milk and butter, which shows some curious variations as the time goes on from calving to grass (at which time there is a notable increase both of milk and butter), and from grass to calving again.

Month.	Total Milk. Lbs.	Per diem average. Lbs.	Total butter. Lbs. oz.	Per diem, average. Lbs. oz.
Nov'ber (21d.)	451	20 1/2	40 1	1 14 1/2
December	755	24 1/8	74 0	2 2
January	746	24 1/15	79 2	2 8 5/8
February	667 1/2	23	77 1	2 10 1/2
March	653 1/2	21 1/13	75 6	2 7
April	602	20 1/15	68 11	2 4
May	770 1/2	24 7/8	87 11	2 13
June	837	27 9/10	88 6	2 15
July	760 1/2	24 1/2	80 5	2 9
August	704	22	66 7	2 2
September	454 1/2	15	32 5	1 1
October (15d.)	123 1/2	8 1/5	8 10	9 1/5
Total	7,525	22 1/28	778 1	2 4

The yield of milk is, of course, not extraordinary, but that of butter is unsurpassed. The nearest approach to it is that of "Jersey Belle of Scituate," whose yield was 705 pounds. There was a time in June when "Eurotas" was giving three pounds of butter a day, or a little over, but this was not continued through one calendar month. She yielded an average of two pounds and four ounces (2 lbs., 4.03) a day for the time she was milking, and two pounds two ounces (2 lbs., 2.03) for the year.

The record clearly indicates that either the cow was not well throughout the year, or she was not fed so that she could do her best. In our opinion, with a well arranged ration of hay, roots, bran, and meal, no such great difference between the yield on hay and mixed food and on grass ought to be observable, as seen in this case.

Great Exports of Grain Continue.

After three years of good crops here, and the poor ones in Western Europe, which opened a market for our supplies, we could hardly expect a continuance of the good fortune, and grave fears were generally entertained that the large supplies of 1880 would result in a great overstock which would sink prices to a very low figure. But now Eastern Europe is deficient, and the competing supplies of wheat usually sent from the Black Sea region will not appear. So all we have to spare will find a market abroad at remunerative rates. A study of the condensed tables in our market reports will always be found interesting. Thus we see by table 4, on page 526, that from January 1 to November 8, the exports of Wheat and Corn from New York City alone have reached the following enormous figures, reckoning a barrel of flour as equivalent to five bushels of wheat:

	1880.	1879.	1878.	Total.
Wheat, bush.	72,781,000	70,878,181	58,182,823	201,842,004
Corn, bush	45,141,000	29,248,000	24,019 000	98,408,000
Total bushels	117,922,000	100,126,181	82,201,823	300,250,004

Or the total bushels of these two articles of breadstuffs exported from New York alone for a little over ten months of three years exceeding *three hundred million bushels* (300,250,004). During the same periods, some seventeen million bushels of Rye, Barley, Oats and Peas were exported. And these exports are still continuing and will continue on a liberal scale well into next summer. As will be noted in the market report, we have on hand already in our markets "visible supplies" of nearly forty million bushels of wheat and corn, besides the large stocks still on the farms.—One can hardly comprehend the magnitude of the figures without taking some such illustration as this, to wit: That a *single* million bushels will load 4,000 freight cars with 250 bushels each, or 25,000 wagons with 40 bushels each.—Note that above we have only spoken of one shipping port, for part of the years, and have not taken into account San Francisco, Philadelphia, Baltimore, Boston, and numerous other exporting points of considerable importance.

Corn Shellers—The "A. B. C."

There is probably no farm implement of which inventors have presented so many forms as the Corn Sheller. It must rank very near the washing-machine in the records of the Patent Office. As in many other cases, when a really effective machine is produced, it is found to be exceedingly simple. The "A. B. C." Sheller may be instantly adjusted to shell the smallest pop-corn, or the largest horse-tooth varieties; it removes every kernel, delivers the corn at one place, and throws out the cobs at another. A small fan blows the chaff from the corn; it runs with ease and works rapidly. An examination of the interior shows it to be of the simplest structure; nothing to get out of order. Even the most careless "help" would find it difficult to disable the machine. The engraving represents this Sheller, which it will be seen is very compact, taking up but little room, either in transportation, or when set in its place. Mr. Cohu, who makes the implement, informs us that it has met

THE "A. B. C." CORN SHELLER.

with a very general acceptance in Central and South America, and that the demand from those corn-growing countries is very large.

Coöperative Stores.

We are in the receipt of numerous letters asking about coöperation, and have been at a loss what to reply or what to recommend. Now, however, thanks to the visit of Mr. Thomas Hughes to this country, and to the exertions of certain respectable citizens of New York City and County a "Central Coöperative Board" has recently been organized to promote the formation of local Coöperative Societies all over the country. A large number of the best and most public-spirited citizens of New York offered, through this society, a public reception to the English philanthropist and statesman, which was very numerously attended. Mr. Hughes addressed the meeting on the subject of coöperation, and in this admirable address and the speeches which followed, the subject was earnestly pressed upon the American people. The plan is briefly as follows: Consumers of groceries and manufactured articles in any place unite in forming a society; they determine the price of one share of stock and the number of shares, and organize under the laws of the State for forming joint-stock companies. The shares may be paid for in whole or in part. The money is taken to buy the goods needed at wholesale. These are sold for cash at usual *retail* prices, no effort being made to undersell other stores. The storekeeper and clerks, if he or she has them, are paid salaries, and the profits are divided quarterly among the stockholders *in proportion to their purchases.*

It is a prime principle with the "Coöperators" to have nothing to do with adulterated or misrepresented goods of any kind, and to sell consumers such articles as they need of the best quality.

There is already considerable important literature on this subject, chiefly in the form of speeches and addresses; enough of this will be sent by the Central Board to any applicants, to give a good idea of the scope of the enterprise, and of how to best go to work to start a coöperative store in any neighborhood. Those desiring further information would do well to address "The Central Coöperative Board, No. 291 Broadway, New York." We may add that in many cases coöperative stores in England have paid very handsome dividends to stockholders, and that the number of such stores in that country is largely increased year by year.

Forty Years!

As the *American Agriculturist* for 1842 constituted Volume **1**, the numbers for 1881 will complete the **"Two Score"** or round **40 Volumes!**

It would be interesting to go over the history of these years had we space. Forty years ago there were few railways, no ocean steamships, and no telegraph. To send the briefest message eighty miles by mail cost 18¾ cents postage for *each* small piece of paper. Harvesters, mowing machines, cultivators, horse-rakes, and a hundred other improved implements were unknown. We well remember our great satisfaction, not long before that period, at getting a cast-iron mould-board plow in place of the wooden one previously used; also at buying cut nails at 16 cents a pound, instead of using wrought nails hammered out on the blacksmith's anvil. We also recall the excitement on our then far western farm, upon the appearance of our first "Elliptic" or steel-spring wagon. Also the advent of the fanning mill, and of the first cooking stove, with its bake oven, etc. An earlier number of this journal described the first steel plow. Sewing machines were scarcely thought of; every stitch was done, one by one, with weary fingers and aching eyes.—The above are but specimens of a thousand improvements since No. 1 of this paper went out on its mission.—What changes in our own land and government! What was then the western edge of our cultivated country is now east of its center. The map of Europe differs widely from *our* school geography. The powerful Germany of to-day was not in existence, save as a great number of petty States, with hardly a bond of union in government or interest, except the similarity of language. Almost the same of Italy.

Of the first thousand Readers of the *American Agriculturist*, less than a hundred to-day remain alive. Of the half million Subscribers whose names have been on our mail books during these forty years past, between three and four hundred thousand sleep beneath the soil they cultivated. But most of them no doubt did their allotted work well, and they have gone to their reward.

We are spared, and as we begin the work upon our 40th Volume, it is pleasant to know that some of the first readers still remain as patriarchs in the *Agriculturist* family, along with tens of thousands of the second and third generations—the sons and grandsons, and the daughters of earlier readers.* With these are numbered many other thousands of newer readers, who are heartily welcomed. We trust they will find in our columns much that will interest, and much that will profit them.

We shall now begin our work upon Volume 40 with cheerfulness, with earnestness, with added experience, and with a determination to make it eminently worthy of its distinguished place in the series. We invite every present reader to continue with us, and to bring along troops of new friends. Our best efforts will be put forth to do them all the good possible.

* We shall be much pleased to receive a brief note or letter from each present subscriber, who has been a continuous or nearly continuous reader from the first No.

Trusses in Barn-building.

Our barn-cellars, and often enough the principal floors of barns, are obstructed by piers or posts, which seriously interfere with the room, and yet more with their convenient use. A correspondent sends us sketches of his simple trusses. They are

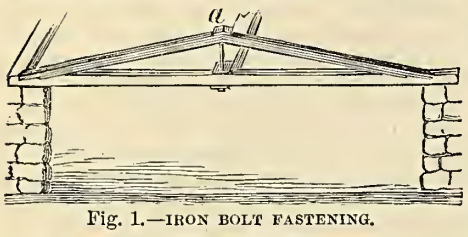


Fig. 1.—IRON BOLT FASTENING.

of two forms: one in which the brace-beams are fastened to the tie-beam by a long iron bolt, fig. 1; the other in which the brace-beams are notched into an upright post, shown in figure 2, the post being bolted to the tie-beam by a bolt, holding by a nut let into the post like an bed-screw. This is shown in figure 3, which is a view of the truss from below, looking upward, showingthe iron-plate crossing the tie-beam of the truss, and supporting the string-pieces on which the floorjoists rest.

The sills and cross-beams of a barn, fifty feet wide, need but a single supporting post or pier

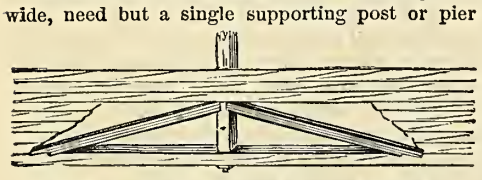


Fig. 2.—WITH AN UPRIGHT WOODEN POST.

each in the center. The trusses, 25 feet long, being made of 4 by 8 timber set edgeways. Inch-and-a-quarter iron bolts are needed, with half-inch washers, both for the heads of the bolts and for the nuts. When the upper ends of the braces are mortised into a post (fig. 2), three-eighths or half-inch plate-iron should be used as shown in figure 3, instead of washers under the head of the bolt. There is room for such trusses on the outside, under the windows, and within the barn in the partitions—each side of the barn floor, and wherever partitions occur, as between bays. It is not difficult, with a little contrivance, to strengthen a cross-beam so as to take a post out almost anywhere where space is needed—in the cellar or elsewhere. Such a change, when made, will often be found so great a convenience in turning carts and wagons in a cellar, that the wonder will be that it had not been made long before.

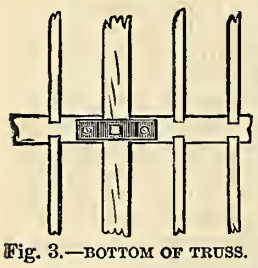


Fig. 3.—BOTTOM OF TRUSS.

"How Pure Milk May be Supplied to Boston."

This is the title of a pamphlet embodying a plan submitted by the Worcester West Milk Producers' Association to the producers and consumers of milk for the city of Boston. At the outset a very plain truth is stated in a very plain way: "To sell milk as milk is probably more difficult than to sell anything else raised on the farm." The present bad state of the milk trade is presented under the heading *Adulteration:* "It is safe to say that the majority of well-to-do people in the city, not to speak of poor people, are supplied with milk which is a libel on the cow which is supposed to have produced it." For this there is claimed to be a remedy. An organization is proposed similar to the notable Aylesbury Dairy Company that has been so successful in London, England. The capital stock is divided into small shares, a portion of which is to be held by the consumers, the balance of the stock, and the larger part, to be in the hands of the farmers, the object being to get the largest number of producers and consumers interested who will work for the welfare of the company. The chairman of the State and City Boards of Health is to be, by virtue of his office, one of the directors of the company. A chemist is to be employed to inspect the milk. "We believe the majority of farmers are honest and never send to market any milk that has been watered. But human nature is weak, and farmers being human, it would do no harm to have them bolstered up by a chemist to keep them from going astray." A similar organization has been in operation for eight years in the city of Syracuse, N. Y., with a success equal, though on a smaller scale, to the one in London. Under such a system each producer sells his own milk, because it is through a company of which he is a stockholder, with stock just in proportion to the amount of milk he has to sell. This is a matter which concerns other cities than Boston. The inhabitants of every town and city are interested in the milk supply, and the sooner some practical method can be devised for the distribution of absolutely pure milk the better it will be for both the consumers and the farmers who produce it.

Tenant Houses on Farms.

We are near the end, we trust, of a transition state, from dear and irregular labor to that which is cheap and steady upon our Northern farms. In the older States, since the war, the policy has been to get along with as little labor as possible, and to hire only in the summer by the month or day during seed-time and harvest. On hundreds of farms very little labor is employed beside that of the owner and his boys. The result is seen in the two facts that the population is waning in these districts, and many of the farms are for sale at first cost of the buildings upon them. In the olden time, in New England, we had cheap and abundant labor, and of the best kind. Farmers' sons, trained from their boyhood to farm work, hired out for years to accumulate capital enough to stock a farm and start business for themselves. They lived in the families of their employers, and were skillful and reliable help. This class of labor is almost unknown now. The cities, the factories, the colleges, the schools, the new States and Territories take nearly all our farmers' boys and girls, and we have to depend on foreigners for help. This is likely to be our main dependence in the future, and we must make the best of it. There is a reluctance to take them into the family as boarders, not so much on the score of prejudice, as of increased labor in the household. So the farm hand is hired only by the month or by the day, and much of his time is idle for want of employment. The farm suffers for want of labor, and he suffers for the lack of employment. What is wanted now is a cheap, comfortable farm cottage, where the laborer can have a steady home, and the farmer can have steady, reliable labor. The advantages of this course are manifold to both parties and to the community. The farmer, in the cottage, makes a handsome addition to his capital. It costs, say, six hundred dollars in money, material, and labor, most of which is furnished from the farm. This is to pay eight per cent interest on cost, to be paid in labor every month, say, four dollars a month. The farmer needs the work, and it is as good to him as the money. The investment is in his own hands, and more sure than savings bank or railroad stock, as long as he runs a farm. He secures, also, steady, reliable help every day in the year, and can lay his plans to grow his crops, and make his improvements intelligently. He knows just what his labor is going to cost him, and what improvements can be made. This labor, under his own training, is all the while increasing in skill and effectiveness, and he can use machinery in growing and harvesting crops to the best advantage. He also secures a good home market for a part of his farm products. His tenant has a wife and family, and the supplies of fuel and food would naturally come from the farm. Many other supplies of dry goods and groceries, would come from the store where the farmer traded, and could be paid for in barter, so that rent and farm products would pay for from one-half to three-fourths of the labor bill. This arrangement would solve the question of board. Extra hands, if needed, could board at the cottage. The laborer would gain quite as much as the farmer. He would have, to begin with, an employer interested in his welfare, and in the improvement of his skill and his moral condition. He would have a fixed home, and the means of supporting his family in comfort. He would have remunerative employment for every day in the year that he was able to work. No time would be lost in waiting for a job, no apprehension of the failure of fuel and bread. He would have good schools and church privileges for his children, and they would have as bright prospects in life as any of their neighbors. Society would gain very much by this arrangement. There would be two families instead of one on the farm, and if this custom should become general, there would be a large addition to these districts that are now waning in population and wealth. The school houses and churches would be well filled again. The farms would have plenty of labor, increase in productiveness, and rise in value. In short, prosperity would be restored to these waning agricultural districts. Let us have Tenant Houses on our large farms, and secure for ourselves the many privileges that they will bring. CONNECTICUT.

The Dung Heap.

The manure pile has been called, and not without good reason, the "Fountainhead of Benediction." Good farming in an old country (and we are not sure but in a new one also), begins with a strict

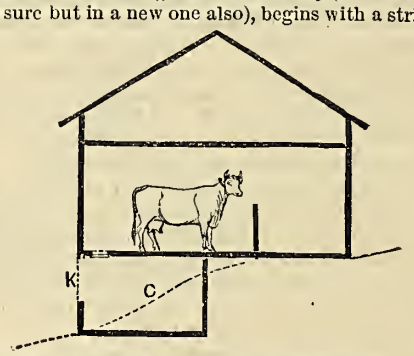


Fig. 1.—STABLE WITH MANURE CELLAR.

economy at the manure heap, and the liquid fertilizing elements that come from the farm animals. There are two distinct methods of saving this manure, namely, the dry and the wet way. In the former, absorbents, as dry earth, leaves, etc., are employed; in the latter, all the liquid is received in tanks, and applied to the land in that form. If the dry or absorbent method is adopted, it is best to locate the stable on a side hill, that a manure cellar may be secured at little cost of excavation. Figure 1 shows a diagram of a stable with a manure cellar, *C*, under the stable, provided with a door, *K*, for the removal of the manure. The floor of the stable should be of plank, with a gutter behind, and a trap door for passing the manure to the cellar

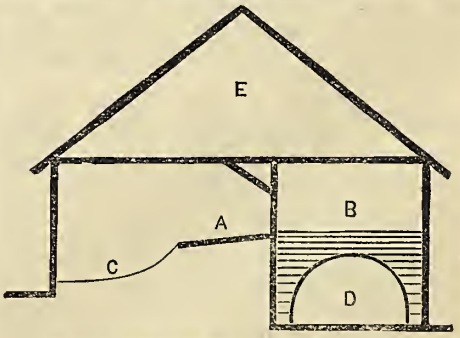


Fig. 2.—STABLE FOR LEVEL GROUND.

below. A diagram of a stable for level ground is shown in figure 2. The cow stands upon the slanting floor, *A*, with a depression, *C*, behind for the accumulation of the manure. This portion, as well as the floor under the cow, should be finished in cement. A passage for distributing food is at *B*, with a root cellar, *D*, below. There is a loft, *E*, above, for the storage of hay. Such a stable is especially designed for the keeping of one cow.

Irrigation in Shadtown.

BY TIMOTHY BUNKER, ESQ.

Mr. Editor.—Sinee my experiment in "the irritation of the land," twenty years ago, on the Horse Pond lot, the physie has been working slowly, but quite surely, in all the neighborhood. It took Jake Frink a great while to understand the philosophy of draining at the bottom, and pouring water on top, and he does not fairly understand it now. He was wont to put the case in this style:

"Ye see, Squire Bunker, it is no kind o' use to pour so much water on to the top of the land, that's what's the matter with half the pastering I've got. It has too much water already. Jest look at the back part of my cow paster. It's covered with water all the spring, and skunk cabbage, poke root, and brakes grow like weeds all through the summer, but grass is mighty skase. Ef ye sow grass seed on't, it don't seem to do any kind of good. It gets killed in the winter, or choked out by the weeds. A feller has to be migbty smart with the bush scythe to keep down the hardhack. the alders, the wild roses, maples, and elms that keep springing up. 'Taint much use to be fightin' etarnally with the nateral bent of the sile. Some sile was made to grow hardhack and skunk cabbage, and it's agin nater for it to produce clover and red top. I can see that there's some sense in draining off water from such land, but when you come to pouring on more water on top, it seems to be making a bad matter worse."

But Jake did not apply his sense to his cow pasture, did not dig any ditches to draw off the surface water, and it has run largely to brush. But there was the living argument of the Horse Pond lot, with drains at the bottom and irrigation at the top, which contradicted bis philosophy and kept him in a stew. His neighbors who attend the Farmer's Club, and take the *American Agriculturist*, had more faith and believed facts, if they could not explain them. Three tons to the acre was worth looking at and striving after, whether they could understand it or not. They began to look about for small streams upon their farms, that could be turned out of their course upon the neighboring upland. Small ventures were successful. Grass sprung up in the track of the water, earlier in the spring, was more abundant in the summer, and lingered longer in the fall, and was sometimes green at Christmas. There was no mistaking the fact. Irrigation often came up in the Club. The irrigation ditches multiplied. Idle streams were utilized. Stunted, gravelly pastures grew green, and the sod thickened, meadows yielded more hay. Stacks multiplied, the barns had to be enlarged, and many farms increased their stock. Irrigation was a success, and Tim Bunker had carried his pint, according to the prophecy of Seth Twiggs.

This summer I was over in Shadtown, to visit the farm of Solomon Wise. It consists of 225 acres of land, of average quality with the farms in the neighborhood. It has been the homestead of the family for three generations at least. Here Solomon's father lived, an enterprising farmer in his time, and did a large business in raising mules, and in trading them off for the West India market. Some fifty years ago, or more, he bought a celebrated Jack, and greatly increased the size of his mules, for which there was then a lively demand. The beginning of the system of irrigation that prevails upon this farm dates back to the time of his grandfather, a hundred years ago or more. Any good farmer, in riding by, would notice the exceptional greenness and fertility of this farm. This is owing mainly to the free use of water for a hundred years or more upon about 40 acres of the farm. The system of irrigation is of the simplest and most inexpensive kind, just such as any skillful farmer could make for himself, without the aid of stone mason or engineer. Near the north end of the farm a small trout-brook comes in, never big enough for a mill stream, and, in summer, dwindling away to a mere rill. It is fed by springs, and in these springs the trout survive through the heats of summer. This brook is dammed near the spot where it enters the farm, with a slight bank of earth and stone. No effort has been made to accumulate water in a reservoir, though it could be done at a small expense. The brook rises in a swamp a mile or two above, and the basin embraces several thousand acres, which would collect a large supply of water, if it was husbanded. Only a part of the natural flow of the water has been turned out of its channel. The irrigating ditches, of which there are several taken from the main stream, are small and narrow, and have a very slight fall. They could be made very rapidly with a plow and ox-shovel. The forty acres put under water slopes gently to the south and east. The water is taken out of these irrigating ditches in slight rills, and passed over the meadow as evenly as possible. Any surplus water falls into the ditch below, or is returned to the brook. The distance for which the water is diverted from its natural channel is less than a quarter of a mile. The water is kept flowing summer and winter, and the winter flowage carries quite as much fertilizing matter as that of summer, and perhaps more. The refuse vegetable matter, gathered in the swamp above, floating leaves, wash of roads and brook channel, is carried down to these meadows. The water is often discolored in heavy rains, and even that which seems to be pure, carries more or less sediment with it. The liquid manure may be very thin, but the fact is well established that, wherever water runs over a well-drained soil, grass springs up in greater luxuriance. The purest spring water makes grass wherever it flows. While Solomon Wise sleeps, in summer and winter, this brook is making money for him, as it did for his father. The only expense to him is the slight labor of keeping the ditches clear, and of regulating the flow of the water. The soil is a gravelly loam, and slopes so much that there is little chance of stagnant water. In the opinion of Mr. Wise, the crop of grass is doubled by the irrigation alone.

There are several advantages of this system of irrigation besides the large increase of the grass crop. All these forty acres of meadow can be kept perpetually in grass, which is probably the most profitable crop upon the farms of New England. There need be no more plowing, no more tillage crops upon these acres. The sod may thicken from generation to generation, and produce that best of all forage, a thick, fine hay, made from a mixture of grasses grown upon an old sod. Then top-dressing, when it is applied, can be turned to the best advantage. The manure is carried down immediately to the roots of grasses by the large supply of water upon the surface. There is no loss from evaporation. The soil is kept up to a production of nearly two tons of hay to the acre, without any top-dressing. Upon this the calculation is based of the value of irrigation upon this farm. We suppose the natural production of the land to be not over a ton to the acre. A ton to the acre would be a fair estimate of the hay made by the irrigation. Hay sells in the neighboring city markets at from fifteen to twenty dollars a ton, depending somewhat on the season, and the quality. If we call the hay ten dollars a ton standing, it would give $400 as the annual dividend declared by the brook. The investment is about as secure as Government bonds, which pay 4 per cent nearly. The income is about the same as $10,000 in United States Stocks. Not every farm has the facilities of this for irrigation, but many have small streams running to waste that might be utilized at small expense, and made to pay good dividends. Let us look after them.

Hookertown, Ct., Nov. 1, 1880. } Yours to command, TIMOTHY BUNKER, Esq.

Accumulation of Manure in Stables.—A large mass of dung, unless frozen or kept near the freeeing point, will undergo decomposition, and gives off, besides steam, ammonia, and other gases. These tend to soften and injure the hoofs of animals, and especially horses, that may be forced to stand continuously upon the accumulation of dung. These gases cause inflammation of the eyes, and injure the general health, interfere with the digestion, and reduce the vigor of the animal. There should be no mass of manure in any stable where horses are kept. A clean floor and pure air are requisites for the best health of the animals.

The Rib-Grass, or English Plantain.

Among the plants recently sent in for naming and information upon its fodder value is the Rib-grass (*Plantago lanceolata*). The letter accompanying the plants stated, the "new comer must have been introduced in the clover seed, as it first appeared upon the farm in the clover field." This is probably true, as this weed is most commonly carried into the newer settled portions of our country in clover seed. The seed of the Rib-grass and Clover are so nearly alike in size and color that their separation is effected with difficulty, and the presence of the weed seed is not noticed without more than ordinary inspection. By the aid of a hand-lens or pocket magnifier, the differences are shown at once.

RIB-GRASS, OR ENGLISH PLANTAIN.

The Clover seed is in shape much like a small bean, and alike on both sides, while the Rib-grass seed is convex on one side, and concave on the other. The differences are shown in the seeds in the upper part of the engraving, those on the right being those of the common Red Clover, with one seed considerably enlarged, and on the left those of the Rib-grass. The Rib-grass belongs to the same genus as the Common Plantain, so frequently found about our door-yards, but differs from it in growing to a greater hight, the leaves being long and slender, and the long flower stalk bearing a comparatively short spike or head of inconspicuous flowers.

The engraving is a much reduced one of a Rib-grass plant with its strong perennial root, and will be quickly recognized by many farmers, especially in the older parts of our country. This Rib-grass cannot be classed among the worst of weeds; in fact, it has been frequently sown for pasturage; it is eaten by nearly all kinds of farm stock, especially sheep. It is so inferior in quality and productiveness to many other forage plants, that its chief harm is in occupying the soil to the exclusion of better plants. Great care should be taken to sow only pure seed—inspect all clover and other seed coming from older parts of the country. The plants may be choked out by a heavy growth of clover and other valuable crops.

A Country House, Costing $2,200.

BY S. B. REED, ARCHITECT.

These plans are prepared for a convenient and comfortable dwelling, especially adapted to the requirements of farmers.....**Exterior** (fig. 1).—

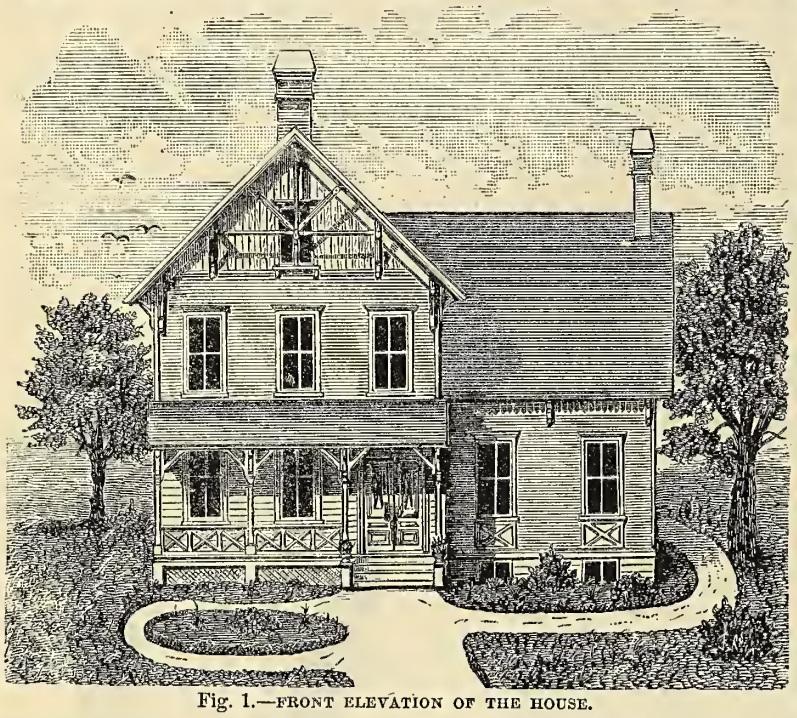


Fig. 1.—FRONT ELEVATION OF THE HOUSE.

The front has a breadth of 38½ feet. The foundations show two feet above the ground. An additional elevation of the whole building can be given by raising the ground a foot or more immediately surrounding the building. The outlines and projections are sufficiently diversified and angular to comport with rural surroundings. The details of the exterior finish are simple in design, and in all cases arranged to serve some practical purpose. ....**Cellar.**—For want of space the cellar plans are omitted. Provision is made in the estimate, however, for a cellar extending under the entire building, with stone walls six and a half feet high, and having five small windows, an outside entrance, and stairs leading to the work-room above..... **First Story** (fig. 2).—Hight of ceiling in main house, ten feet; in wing, eight feet eight inches. A hall, parlor, living-room, bedroom, work-room, pantry and three closets, are embraced in the divisions of this story. The front entrance is from a pleasant piazza to the main hall, and from it each of the principal apartments of the first story are entered. This hall also contains the main flight of

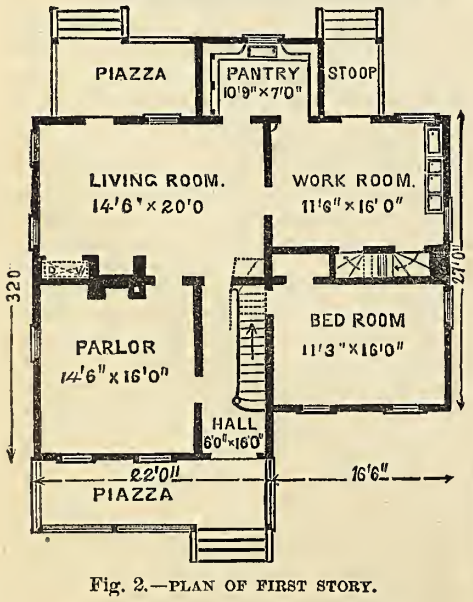


Fig. 2.—PLAN OF FIRST STORY.

stairs leading to the second story. The space under the stairs is left open far enough to allow for a passage to the bedroom. The Parlor is of fair size, well lighted, and contains a marble mantel. The Living-room is the most spacious apartment in the house, intended as the common gathering place of the family. Its interior arrangement is partially shown in figure 4, where views of one side and both of its ends are given. The side not shown has doors opening from the rear piazza and pantry, with a window between giving views to the rear. A large range, with elevated oven, is set in the fireplace, with a shelf above. The space between the chimney and end wall at the right, is filled out flush with the face of the chimney breast, and furnished with a fuel box below, and shelving with glass doors above. The fuel-box has capacity for a barrel of coal, and is hung to balance weights, and operates as a dumb-waiter, filled in the cellar and runs up to where its contents may be easily reached, and passed to the range as required. An opening is made through the hearth beneath the range, through which all the ashes fall into an ash pit, formed in the foundation of the chimney. By these arrangements it will be seen much of the

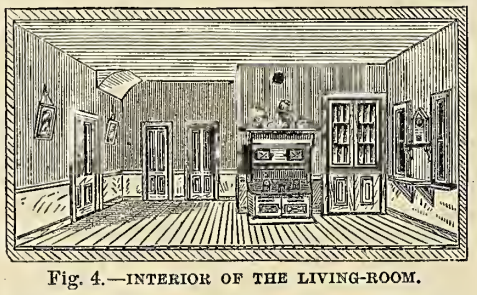


Fig. 4.—INTERIOR OF THE LIVING-ROOM.

heavy work is saved and the scattering of coal dust and ashes prevented. A ventilating register is placed in the chimney above the range, near the ceiling, to draw off the heated air and steam constantly arising from the range when in use. At the right-hand end of the room are two windows giving views to the side. Between these windows an ironing board is placed, and being hung with hinges, may be let down so as to occupy but little space when not in use. Above the latter a clock and lamp shelf is placed on small brackets of scroll work. The right-hand door opens to the parlor or sitting-room; the one next to it leads to the main hall, and the third in the center of the left-hand end opens to the work-room. The Work-room is designed as a sort of kitchen, where the coarsest work is done. It has two windows, and doors opening from the outside, a stoop, pantry, kitchen, and stairs from the cellar and the second story. This work-room contains a pump, sink, and three stationary wash tubs. The Bedroom is pleasantly situated with outlooks to the front, and is sufficiently removed from the routine and noise of the general housework to insure its being quiet at all times. A person having many official or professional calls, requiring an office, might appropriate this room to that purpose, by simply changing one of the windows to a door or outside entrance. The Pantry is of good dimensions, and conveniently arranged as shown in figure 5. It is entered from the dining-room and work-room, and is lighted by a full-sized window. A wide plank extends around three of its sides, as a work-shelf, with a wash-tray inserted opposite the window. The space under this shelf is occupied by closets and drawers on two sides, the balance being left open for barrels, etc. Above are shelves, placed at convenient distance from each other, and inclosed on one side with sash doors....**Second Story** (fig. 3)—Hight of ceilings in main part, eight feet, and in the wing, 4 to 8 feet. There are five sleeping apartments, five closets, a bath-room, and two small halls in this story. The platform near the head of the main stairs is on a level with the wing floor.

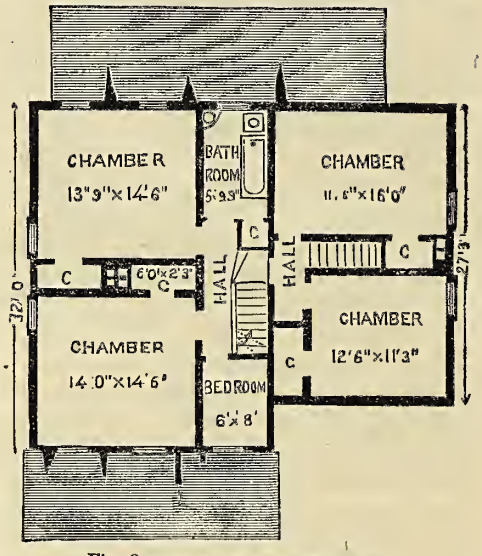


Fig. 3.—PLAN OF SECOND STORY.

The stairs to the attic are placed over the main flight.....The following **Estimate** indicates the character of the work, and the cost of materials:

80 yards Excavation, at 25c. per yard		$ 20 00
1,350 feet Stone Work (complete) at 8c. per foot		108 00
4,000 Brick in chimneys (complete) at $12 per M		48 00
850 yards Plastering (complete) at 25c. per yard		212 50
6,500 ft. Timber, at $15 per M		97 50
Sills 4x8 in. 170 ft. long.	Ridges 3x8 in. 51 ft. long.	
Girders 4x8 in. 67 ft. long.	80 Beams 3x8 in. 22 ft. long.	
6 Posts 4x7 in. 21 ft. long.	26 Beams 3x8 in. 17 ft. long.	
3 Posts 4x6 in. 13 ft. long.	16 Beams 3x7 in. 22 ft. long.	
Ties 4x6 in. 275 ft. long.	34 Rafters 3x5 in. 18 ft. long.	
Plates 4x6 in. 100 ft. long.	18 Rafters 3x5 in. 20 ft. long.	
V'nda Timb'rs 3x8 in. 200 ft. l'g.		
150 Joists, 3x4x13 at 15c. each		22 50
300 Wall Strips, 2x4x13 at 12c. each		36 00
186 Siding, at 28c. each		52 08
Cornice materials		30 00
500 Shingling Lath, at 6c. each		30 00
78 bunches Shingles, at $1.25 each		97 50
250 ft. Tin, Valleys, Gutters and leaders, at 8c. per ft.		20 00
319 Flooring (inside), 9½ in. wide, at 28c. each		89 32
80 Flooring (outside), 4½ in. wide, at 15c. each		12 00
5 Cellar Windows, at $3 each complete		15 00
24 plain Windows, at $7 each complete		168 00
Veranda finish, $60; Stairs, $60; Mantels, $50		170 00
23 Doors (complete) at $8 each		224 00
Closet finish, $50; Plumbing, $150; Painting, $150		350 00
Carpenters' labor, not included above		300 00
Carting, $30; Incidentals, $67.60		97 60
Total		$2,200 00

Shade Trees for School-Houses.—Not one in ten of our country school-houses is shaded by a single tree. Indeed, a school-house may usually be recognized by its bleak appearance, and the entire lack of shrubs and flowers about the grounds. If bought, the trees would cost only a small

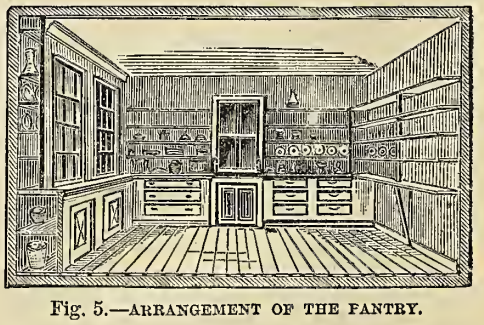


Fig. 5.—ARRANGEMENT OF THE PANTRY.

amount, but in most cases there need be no outlay of money, as native trees may be had for the digging. It would be easy for a teacher to have a tree-planting "bee" on a Saturday, when the older boys would gladly volunteer to perform a task which would add greatly to the cheerful appearance of the school-house and its surroundings.

The Southdown Ram, "Stalwart."

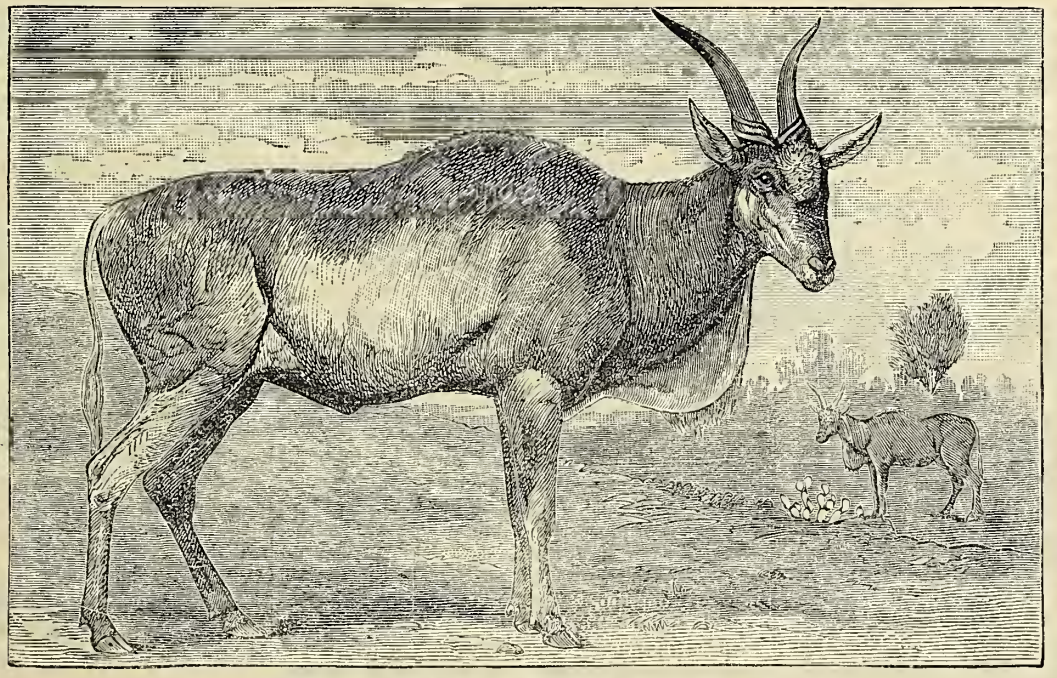
The accompanying portrait is of "Stalwart," an excellent Southdown ram, bred by Henry Webb, Esq., of Streetley Hall, Cambridgeshire, England, and imported by Mr. Samuel J. Sharpless, of Philadelphia, to lead the flock at "Lenape Farm," Mr. Sharpless' country seat, in Chester County, a few miles from Philadelphia. This flock consists of forty breeding ewes and their natural increase. It is, we believe, pre-eminently a Webb flock, the progenitors of it having been bred from rams imported from the late Jonas Webb of Babraham, the father of the breeder of "Stalwart." They are excellent sheep, of great substance, well wooled, and of good constitution. We are glad to learn from Mr. Sharpless that there has been an unusual demand for rams. Our readers knows our high opinion of the breed. It exhibits ovine proportions in extraordinary perfection, and where quality of mutton rather than simple weight is an object, no breed is more attractive to the general sheep-raiser. The animals are well-formed, economical feeders and mutton-producers, making excellent early lambs, and yielding fair fleeces of medium wool. The Southdowns have not black, but brownish gray faces and legs, which are bare to the knees and hocks. They are very small-boned, with little offal, broad in the best parts, rump, and hams, loin and back; low in the twist; deep in the brisket; square and level throughout. In fact, as blocky as a Shorthorn, and a most beautiful and useful breed, the mutton uniformly bringing the highest price in market. It is not a mere matter of fancy which leads buyers to prefer Southdown mutton. It is juicier, higher flavored, more like beef, and yet having a full, rich mutton flavor, free from woolliness, and the meat is veined and marbled with fat. There is a greater proportion of lean to fat in well-fatted animals than in most other breeds. The favor in which this breed is held is noticeable from the fact that the gray pates and legs are always left upon the carcasses when dressed for market and hanging in the butchers' stalls, so that connoisseurs may recognize their favorite breed. Mutton of the closely allied breeds Shropshire and Hampshiredowns is generally passed off for Southdown in the market, but the legs and faces of these breeds are of a much darker color.

THE SOUTHDOWN RAM "STALWART."—OWNED BY S. J. SHARPLESS.—(*From a Copyrighted Photograph by Schreiber.*)

Variations in Indian Corn.—The leading grain crops present excellent illustrations of the modifying influence of climate; but none better than the Indian Corn. This plant has a wide geographical range, and the time for reaping the crop varies greatly. In its extreme northern range in North America, but two to two and a half months are required for its development, while at the South as many as six months are required. Heller says the time of reaping varies from "seven months to six weeks." Aside from the period of growth, the appearance of the crop varies greatly; only the small varieties are grown at the North, while in the warm climate of the South the stalks are large, tall, and "the ears frequently higher than a man can reach." One of the most interesting features in a collection of corn, made by Professor Miles to illustrate the varieties produced by climate, is the relative size of the cob. "At the North, the cob, as a rule, is larger in proportion than in the southern varieties, or in apparently the same varieties grown in the Middle States. At the North, the flint varieties are exclusively grown, while at the South they are entirely replaced by the dent varieties. The smallest, well-developed ear in the collection weighs but half an ounce, while the largest ear turns the scale at one pound and eight and a half ounces." This is a wide range in the size of ears of corn.

The Eland or Impoofo.

The colonists of the Cape of Good Hope have applied the name Impoofo to a large animal of the Antelope group of ruminants, found a native in that region. It is also called Eland, and is most commonly known by that name in the various countries to which the *Orcas canna* has been exported. The Eland is the largest of the South African antelopes, an adult bull measuring nearly six feet in hight at the shoulders, with a length of about ten feet from the nose to the base of the tail. In weight the Eland ranges from seven to ten hundred pounds. The general color upon the back and sides is a grayish yellow, with purplish shades shining through. The lower parts are cream colored, while the face is brownish red with a white chin, and a slight brownish mane. The tail is brownish red, and the dewlap yellowish brown pencilled with brownish red. The horns are nearly three feet long and slope slightly back from the crown, thick at the base, near which they take two spiral turns. The female is much more delicate and elegant in figure than the male, and is of a pale sienna color. When young and not over-fed the Eland is not easily overtaken by the Cape horse. The flesh is peculiarly excellent and is highly appreciated in South Africa where the flesh of most animals is tough. The hide is much prized for leather. Like other antelopes the Eland seems to get along without water, frequenting the desert localities in herds of a hundred or more, far from rivers and streams, and live there for months without drinking. The Eland has been introduced into England, where it is grown to some extent. The first one killed for the table was in 1859—a five-year old, weighing 1,176 pounds, and was described as "huge as a Shorthorn, but with bones not half the size." The texture of the meat resembles beef, with a venison flavor, and possesses a fineness and delicacy that places it high in the list of nutritious foods. With us the Eland is only a zoological curiosity, but in its native home it is a handsome wild animal of no small importance as a source of food. There is a striped variety of the Eland, but it is rare. The skins of these animals are considered trophies of success among the hunters, and therefore held in high esteem by them. The engraving is made from a copyrighted, instantaneous photograph, sent us by Messrs. Schreiber & Sons, of Philadelphia.



THE ELAND OR IMPOOFO OF THE CAPE OF GOOD HOPE.

Among the Farmers.—No. 59.

BY ONE OF THEM.

About "Rockeries" or "Rockwork."

There is something distressing to me about what are called "rockeries" or "rockwork." I mean those heaps of stone, and the sham grottoes which are so much admired by some. They either look like stone piles which have been "tidied up" a lit-

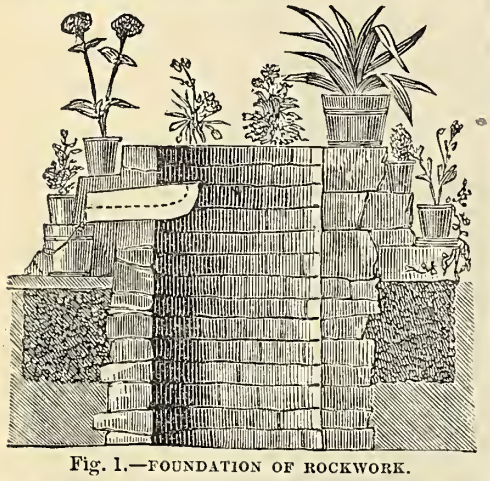


Fig. 1.—FOUNDATION OF ROCKWORK.

tle, and made to support some trailing vines, bunches of houseleek, or stone-crop—or they look like a great effort to do something which turns out a lamentable failure. I have seen now and then an artificial bit of rockwork in a corner, well filled in with earth, half covered with creepers, and shaded by some overhanging tree, where ferns and other shade-loving plants seemed to enjoy the moist cool stones and their retired life, which I rather liked.

A Rockwork Well-curb.

Our old stone house and its surroundings are so rustic, that when we replaced the ancient well-sweep with a modern pump several years ago, there seemed something incongruous about it. We had one pump in the house drawing water through a pipe 80 feet long, but raising it only 12, which was really all the pump we needed, except when we wanted to use the garden hose. So as the platform needed renewing, and we found that the upper stones of the well had been disarranged by the frost, we determined upon a change, and a return to first principles. The well is only about ten feet deep, and is several feet back from the bank which drops off suddenly towards the meadow. I dug out the ground around the well, had the top stoned up to the level of the ground, laid in cement, and a grouting of cement and broken stones filled in all around, making this upper part of the stoning of the well a solid wall, compact as one stone, two ft. wide and high. This foundation is shown in figure 1, which is a perpendicular section of the well.

Fig. 2.—VIEW OF CURB LOOKING DOWN.

For the curb proper we used angular stones of all sizes, the largest as big as a man could conveniently handle, and laid them up with some pains not to make a uniform wall, filling every crevice with cement, and making niches for pots of flowers, and flat projecting stones for the same purpose, to hold the pots. The curb was drawn in towards the top, and at the hight of 2½ feet was finished in a flat surface, no where less than six inches wide, and every seam "pointed," as seen in figure 2, which is a view looking perpendicularly downward.

To provide a place to stand when drawing the water, to set the water-pail, and a spout, two flat stones were laid a little above the level of the ground, and semi-circular places left as the wall was built. At the proper hight for the spout, a hewed stone was laid in. When the cement had set, a stone-chisel dressed the standing and the pail places. This dressed stone appears in strong contrast to the rough work all around, and shows evidence of design in the whole. (See figure 3.) In the flat stone supporting the pail we chiseled a basin smaller than the pail, so that it stands firmly. It holds about two quarts of water, and hens, chickens, dogs, and cats, come constantly to drink.

In its summer dress the well-curb—we call it the *old* well-curb now, looks very well. It is a place where stand a number of house-plants, which remain in the tubs or pots all summer, such as century plants, cactuses, oxalis, the little striped tradescantia, and other such-like things. English ivy has been planted all around, and so has the little pale-green *sedum*, commonly called stone-crop. The ivy is protected at the roots, so that in a severe winter it dies down, but the shoots clamber up to the very edge before midsummer, and the dark-green leaves contrast beautifully with the bright yellowish-

Fig. 3.—SHOWING STANDING PLACE IN CURB.

green of the stone-crop. Besides, there is on one side a bed of gay bedding plants: horseshoe geraniums, asters, and marigolds; on the shady side a bed of ferns, and on the side of the spout, which is south, a bed of roses receives all the overflow of the well, as also many a bucketful of water which is drawn on purpose to dash over it.

The Old Well-sweep.

When a well-sweep and bucket at a well, 12 to 20 feet deep are properly balanced, and well set and arranged, which it is easy to do, they form, in my opinion, the best water drawing apparatus that has ever been devised. The bucket in our well is so balanced that a child of eight years can draw a bucket of water, and a grown person can draw water easily with one hand—and very rapidly. The post or crotch is of red cedar, which is lasting, and has a rustic look. The sweep is of chestnut, which dries very light, is stiff, runs straight, and stands the weather a long time without paint; and the pole is of pine—yellow pine is best, but it must be well seasoned, or it will be pitchy in hot weather for some time. White oak or ash are both good if free from knots, straight, and straight-grained. The sweep and the stone-curb are shown in fig. 4.

On a still summer night we can hear the rattle and clatter of chain pumps, the squeak of the patent rig, with the self-filling and dumping bucket, in different directions, and we look with dread upon the modern patent well-curb—and the more we know about *them*, the better we are pleased with our silent, picturesque, old-fashioned, efficient well-sweep, with its rockwork curb—beautiful even in winter, and always attractive from its cleanliness, and the absolute exclusion of snakes, mice, and toads, which we used to fish up dead, and alive.

An Adjustable Saw-buck.

Those of us who run small farms near the city change "help" too often for our own good But we may pick up a good many good ideas from the ways men of different nationalities have of doing things. A Danish man, while working for us, made

Fig. 4.—THE OLD WELL-SWEEP.

a pair of saw-bucks, to be used singly or together, thus adapted to sticks of any length. They have been in use for several years, and are very simply made, see figure 5. Two forked apple tree limbs were taken, and a two-inch hole bored at the proper angle through each; then sticks were thrust through from the lower side, each one with its mate forming a tripod, that always rests firmly upon the ground, while the upper end is a crotch to hold the wood. Both of these tripods together form an adjustable saw-buck which we find very convenient for cutting up stove wood, or for holding lumber and timber of any kind that we wish to saw.

The Reaper in the Field.

If we were all artists and were seeking the picturesque, then ruins in all their stages would be in order everywhere. The old tumbled down mill makes a fine subject for the painter, but it does not help to make our bread. A country may grow rich in subjects for the sketch book, and at the same time be a poor place for people to live. Ruins are expensive luxuries wherever they are found; but none more so than those that exist on many farms. The farmer that leaves his reaper in the field for the winter, with its four reel arms extended to the four winds of heaven, is doing something for the picturesque; is furnishing an object, which, when the snows of winter come, cannot but strike the eye of every passer-by. With practical persons the question, "Does it pay?" comes boldly to the front. If the machine costs $140, it will perhaps last five years with such treatment, or cost about $36 a year, while if carefully housed, it will last at least twice as long, and reckoning interest at 6 per cent, the yearly cost would be $22, or an expense of $14, for the sake of the rustic scenery, not to

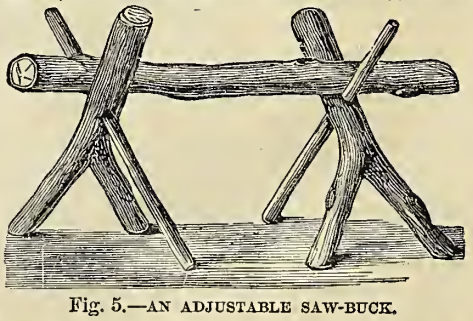


Fig. 5.—AN ADJUSTABLE SAW-BUCK.

mention the greater expense to run a rusty, warped, and decaying machine, than one in good trim. But it may be said, "It costs to build shelter," and so it does; but $14 is the interest on $234, and with the loss on the plows, drills, cultivators, carts, and other farm implements, a good tool house could be built, and more than half of the present loss from exposure be money put into the pocket, besides the appearance of the premises will be greatly improved.

Culverts under Roadways.

Culverts are arched passages for water under a roadway. Figure 1 is a bridge, though a very small one. Timbers are laid from one pier to the other, and planks are spiked upon them and cover the ends. The piers may be laid up of the roughest stone, and in the rudest way, or of nicely faced and angled stone, as shown in the engraving. This is the simplest and easiest way a brook can be taken under a road; but the planks rot and the timbers give out. There is danger of horses stepping through, and there is every now and then the necessity for new planks or timbers. Culverts are much better for all small streams, and last indefinitely, if well made. The simplest form is really about as much a bridge as a culvert; see figure 2. The same simple piers are spanned by rough, more or less flat stones, long enough to reach solidly from pier to pier. The cracks between them and any irregu-

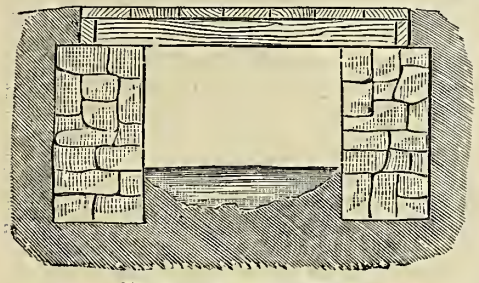


Fig. 1.—A SMALL BRIDGE.

larities are levelled off with broken stones, and the roadway carried over at any desired hight. When flat stones, large enough, cannot be procured conveniently, concrete culverts may be easily made. A very good form is shown in figure 3. Pier walls are laid exactly the width and half the hight, of lime or flour barrels, or even sugar hogsheads. Then a line of barrels is laid snugly end to end between the piers, and a concrete of cement, mortar, and gravel, is spread upon them to the depth of four to six inches, if the cement is very strong and good, or to a greater depth if it is not so good. In laying on the concrete, it is well to go along one side first, and to set small stones in the soft surface, which tend both to keep the cement in place until it sets, and to give solidity to it. This protection of stones is especially valuable upon the top in case the covering of earth or gravel forming

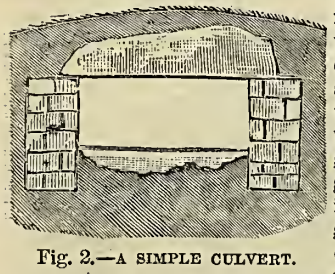


Fig. 2.—A SIMPLE CULVERT.

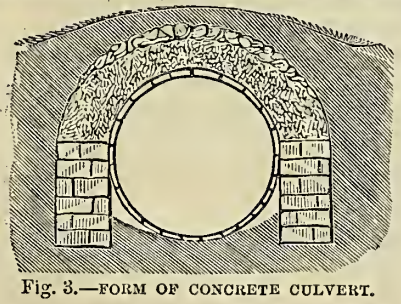


Fig. 3.—FORM OF CONCRETE CULVERT.

the road-bed is likely to be worn away. Figure 4 is a lengthways section of the crown of the arch, showing how the shape of the barrels causes a succession of depressions, which give an additional strength. This makes an excellent culvert. After

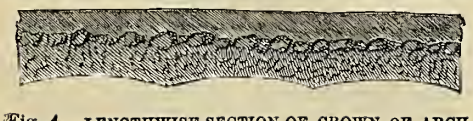


Fig. 4.—LENGTHWISE SECTION OF CROWN OF ARCH.

a week or two the barrels must be removed, for should a freshet occur, the pieces might break away, and form an obstruction which might do damage. The flatter an arch the weaker it is, and the material must be proportionately stronger or thicker. Figure 5 shows a flat arch, made by spanning between the piers with sticks of timber,

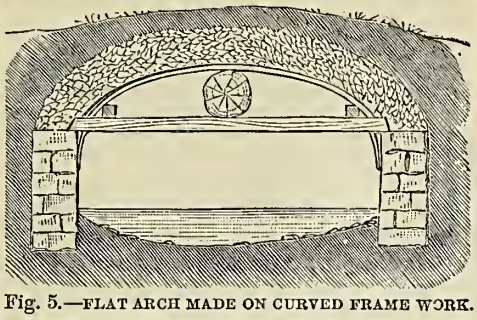


Fig. 5.—FLAT ARCH MADE ON CURVED FRAME WORK.

to hold a round log or other support of desired thickness—say ten inches or a foot. Round or split poles are sprung over this, and the ends brought into position by straight poles nailed or lashed to the timbers near the ends. The surface is made as nearly uniform as possible as to curvature, and covered with flags or leaves, so as to make a surface which will hold the cement. A coat of this should be applied at the outside along the piers, and then, as it grows stiff, farther and farther up. The whole arch should be covered with a coat two or three inches thick, left rough, and when this has hardened, the whole thickness of concrete is laid on as solidly and compactly as possible. If well made, it will form a lasting arch. The timbers may be sawed in two after a while and taken out; the log of course will fall, and the roughness of the under side will be no detriment to the usefulness of the structure.—Figure 6 is a similarly constructed arch, but not arched on the under

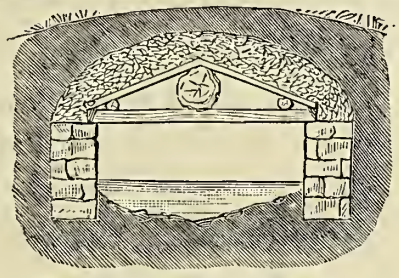


Fig. 6.—STRAIGHT-SIDED ARCHWAY.

side, where straight sticks are used in constructing a foundation upon which to lay the concrete.

Something about Soldering.

Milk pans, pails, and many other tin household utensils, will get leaky and need repairing. Bits of rag and splinters of wood, etc., give temporary amendment in certain cases; but the only permanent method is to use solder. A soldering "kit" consists of a soldering iron of copper, weighing about 12 ounces; a flat 10-inch file, rather coarse; a scraper, and a 3-square file, ground to three scraping edges for an inch from the point. A bottle of soldering fluid will also be required, and a little rosin and some sal-ammoniac. Last, and not least, a few sticks of solder. Directions for soldering: The "Iron" must first be *tinned*, that is, covered with a thin coat of solder. To do this, heat the Iron somewhat above the melting point of solder. File one side of the bevelled portion smooth, and touch it immediately with rosin and soldering fluid, and then with solder, and wipe smooth with a rag. File and "tin" the remaining portion. When done, the surface should be completely covered with solder. Another way is to heat the iron nearly to redness, and rub it upon the sal-ammoniac with solder in contact, when no filing will be necessary. This tinning must be repeated whenever the thin coating of solder is removed by over-heating of the Iron, which is quite likely to occur. Now to the work. Wherever it is desired to attach solder, the parts must be clean. If the surface is not already bright and clean, it must be made so by appropriate means. Here the scraper will generally be of use. Having scraped the surface, apply with a stick some of the soldering fluid, or, instead of soldering fluid, some rosin, to the parts to be soldered. Meanwhile the iron has been heating in the cook stove; not too hot, for then the solder is too fluid and you cannot pick up a portion with the point of the iron. Take the iron from the fire, wipe with a rag, or dip momentarily into a weak solution of sal-ammoniac. Touch the iron to the solder; if the heat is right, a small portion adheres, and is placed upon the spot where it will do the most good. (The tendency to use too much solder should be guarded against.) If the iron is not hot enough, warm it some more. The iron must remain in contact with the place where the solder is to stick until the surrounding parts are at the temperature of melted solder. With the above utensils and directions almost any person can mend a milk pan or ordinary utensil, though there would be much of soldering still to learn. Old tomato cans would be good to practice on until the art is acquired. D. S. L. [See Feb. number, p. 67.—ED.]

Living Posts for Wire-Fences.

Persons often inquire if living trees are not available as posts for wire fences. They certainly may be used, but there is great objection to fastening the wire *directly* to the trees. We give two engravings; figure 1, showing how it may and ought to be done, and figure 2 giving the result of fastening wire or ribbon fencing directly to the trees. The proper way is to nail on a white oak strip, and it is best to use green wood, for after oak becomes well seasoned and dry, it will be almost impossible to drive staples into it—to this the wire may be attached, and no injury will ordinarily be done to the tree. The growth of the tree may tend to deflect the fence a little from the true line, and in that case the strip may probably be started carefully and taken off free from the tree and nailed on again where desired. It might be worth while to saw off a portion of one end of the strip and only shift the top or bottom wire. That would of course be determined by the situation and appearance of the fence. If fastened directly to the trees, the bark soon closes over the wire and any shifting is impossible, without cutting into the trees, making ugly wounds, or cutting off the wires and leaving them in the trees, where, years hence, the pieces will be likely to be discovered by the woodcutter, and would try equally his own temper and that of his axe. Neither is it best to nail fence strips directly to trees when "living posts" are used for strip fence. It is much better to nail to perpendicular strips attached to trees.

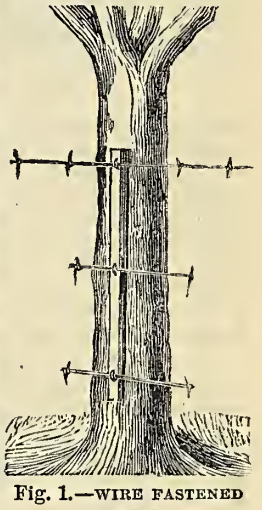


Fig. 1.—WIRE FASTENED TO STRIPS.

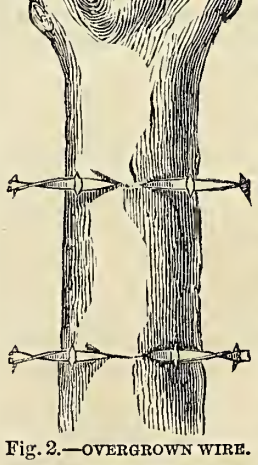


Fig. 2.—OVERGROWN WIRE.

Cure for a Baulky Horse.—We have cured incipient baulkiness by persistent gentleness, never overloading, always starting evenly, and easily, gradually increasing loads, and patting and praising the animal after a good pull. This resulted in a complete cure, whether it would cure a chronic case or not we cannot say, but it is worth trying.

Cow-Barn and Poultry-House.

In Major Alvord's admirable contribution to the little book lately issued on "Keeping One Cow," he gives, with very little comment, the plan of an excellent barn. It was at first a mere carriage-house and horse stable; then changed, by the addition of a chicken house, in a wing; finally it was raised, and a cellar or basement for roots, cow-stall, store-rooms for bedding, etc., calf-pens, etc., introduced under the main part, while under the wing is an enclosed shed and manure pit. The engravings are made with such detail, that it is easy to see the relations of things. The second or main floor above the basement is chiefly devoted to storage, although adapted to be used for a horse and carriage barn. In the wing upon this floor, the poultry have their quarters, above the manure pit. In the enclosed shed in the basement, very comfortable quarters might be provided for a pet porker. On the whole, it is a plan excellently adapted to the wants of a villager or surburban resident, who wants to keep an unpretentious family establishment—pony and phaeton, a cow, and some chickens in comfortable quarters, not to mention the pig.

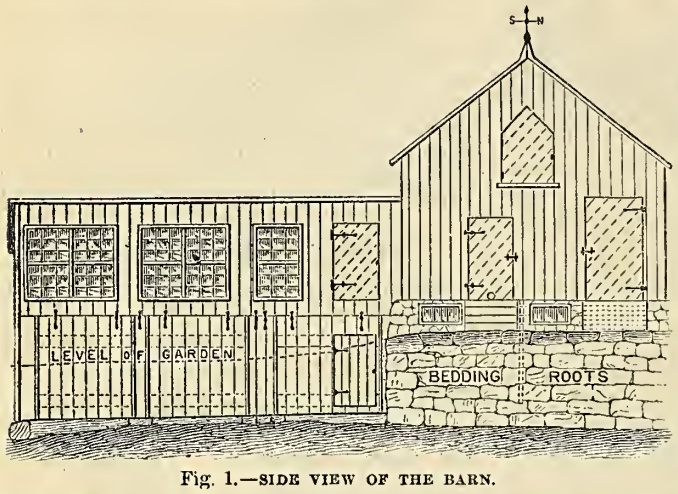


Fig. 1.—SIDE VIEW OF THE BARN.

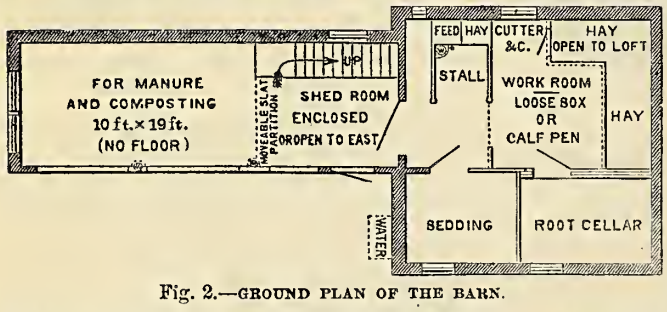


Fig. 2.—GROUND PLAN OF THE BARN.

A Cheap and Durable Cistern.

An abundance of rain water for family use, for the barn-yard, and for irrigation in the garden, is still a great desideratum in our rural districts. The great bar to this water supply is the anticipated expense. It costs money to excavate and line the sides of a cistern with brick and stone. Most farm houses have no provision for washing except well-water, drawn with the bucket, and this is often hard, and the yard and barn-cellar are without any water for stock. A cistern that will hold all the water that falls upon the house, or the barn, is within reach of every thrifty farmer, and will pay for itself every year in saving labor, and in the health and comfort of the family, and in the care of the farm stock. A neighbor of ours, who is a gardener as well as a farmer, built a cistern for his greenhouse last year, and liked it so well that he has built another this fall for his barn and garden. The first item of expense was the labor of excavating on the south side of the barn, where the frost does not penetrate very deep. The excavation is about ten feet deep, ten feet in diameter at the bottom, and twelve feet at the top. The soil is gravelly loam at the top, and compact gravel below. But sand, if it were compact enough not to cave, would answer just as well. The sides of the cistern are made as even as possible, and a wash of Portland cement is applied with a broom—to the bottom and sides. This dries very rapidly, and four or five coatings will make a perfectly tight and strong basin to hold all the water that will ever fall into it. The cost of the cement is very small, and the thin crust, backed by the solid subsoil, is just as good and durable as mason work of brick or stone.

For a covering he used chestnut timber of one foot in diameter, hewn upon one side, upon which chestnut plank two inches thick were laid. Two leaders conduct the water from the eaves of the barn into the cistern. A man-hole was left at the top large enough for the cleaning of the cistern, and for the insertion of the pump. The plank was covered with about two feet of earth, which is a sufficient protection against frost in this latitude. The cistern will hold 8,000 gallons of water, or more, and will furnish an abundant supply of water for stock, and for irrigation in ordinary seasons. The whole cost for labor, timber, and cement, was about fifteen dollars. Most farms will furnish the necessary labor and lumber, and the only money outlay would be for the Portland cement. This cement will harden under water, and become as solid as stone. It is entirely practicable for almost any farmer to build a cistern of a kind which has been described, and to have a good supply of water for his cattle during the winter. Build a cistern.

A Well, laid up with Cement Blocks.

Mr. James E. Dean, of Fishkill, sends us the following clear and concise description of his well, and how he made it. It may be of use to many.—"As in some other communities, we are troubled here with sand running in with the water between the stones and filling up our wells, and we are often annoyed by worms, toads, and other small animals getting in and fouling the water. To shut out all these, and also the impure surface water, I prepared a mold, figure 1, which consisted of a frame with wooden blocks for ends, sheet-iron sides, but without top or bottom. In this I made cement or concrete blocks, similar in shape to the fire-bricks which line cylinder stoves, see figure 2. These blocks are about one foot high, one foot long, and four inches thick, with a groove on one edge and a tongue on the other, and so curved that nine make a complete circle. The well was about three feet in internal diameter, and each course a foot in hight. The materials used were one part Portland cement and five parts creek gravel. The mold, figure 1, is placed for filling in a bottomless box or frame, figure 3, and wedged in place by the blocks, *A*, *A*, at each end. When I had enough of the blocks made, and they had hardened a few days, I commenced my excavation. At about ten feet water was reached, when I prepared a ring, wide enough for the blocks to rest upon. It was made of two thicknesses of inch boards, cut in segments and nailed so as to break joints. This I placed in the bottom, and commenced building, making the horizontal joints tight with cement, but leaving the perpendicular joints with no cement in them. When we had put on three courses, we dug inside and settled our hoops and cylinder, occasionally pumping out the water until we were about four feet below the water line, which just then was very low in consequence of the protracted drouth. Then we laid it up to and one foot above the surface, carefully filling in the sand on the outside, and put on our well-house, with its axle and drum, and everything was ready for work. The water tastes somewhat of cement, which will soon disappear, when I expect to have the best, as I now have the prettiest, well in this vicinity.

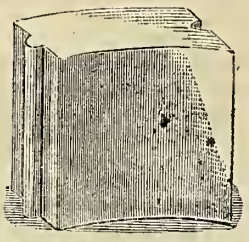


Fig. 2.—A CEMENT BLOCK.

I forgot to say that I put mortices in some of the blocks in each course, for toe-holes to assist in going up and down. To make these I put in a block against the inside iron when the mold is about half full, and tamp the material around it. The water will filter readily through blocks where the proportion of cement is not greater than one to five, though I left the vertical joints uncemented, to facilitate its entrance. If the blocks should not be used before they are six months old, one part cement to eight of gravel would doubtless answer. I sifted the gravel through an ordinary coal sieve, so as to take out the large pebbles, and so make smoother blocks. I would caution parties not to make the material too wet. It should be well mixed while dry, and then only dampened so as to be tamped into the mold, in the same way as moldings are treated at a foundry. A good man can easily make fifty blocks in ten hours, without any assistance. No doubt my arrangement for holding the mold together can be improved.

To give the iron sides of the mold the right shape, I sweep two concentric circles on a floor, and bend the sheet-iron pieces to coincide with each. I then divide the inner circle into nine spaces, draw radiating lines from the center through two of these points, and so find where my end blocks go.

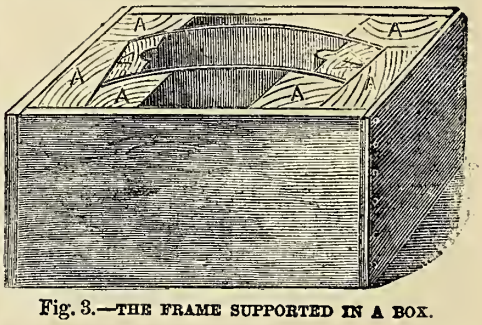


Fig. 3.—THE FRAME SUPPORTED IN A BOX.

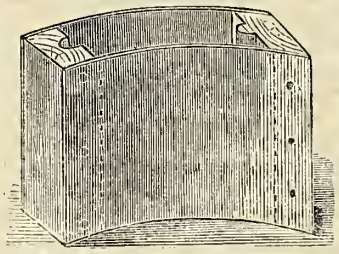


Fig. 1.—FRAME FOR CEMENT.

A Provisional Opening in a Wire Fence.—"J. B. C.," British Honduras, sends a method of making an opening in a wire fence, that will be of service in our own country, where this kind of fence is so largely used of late years: "Fasten the wires securely to the left-hand post; procure two clevises for the opposite post, and fasten them through the center of the post with bolts. Secure the wires to a false post, and have the bottom clevis stationary, and long enough to admit the false post, and streteh the bottom wire. The top clevis should be long enough to admit the false post, and also a wedge so as to thoroughly tighten the wires."

A WIRE-FENCE GATE.

A Fodder Rack for Sheep.

Mr. J. B. Hawley, Hamden, N. Y., sends a very neatly made model of a Fodder Rack for sheep, and says, he has used this kind of Rack for thirteen years, and likes it better than any other that he has seen. It will take to pieces and fold in a very small space, a very important consideration. The compactness of the folded rack is evident from the very closely folded model. The bottom pieces, figure 1, are made of two-inch stuff. Two iron pins on each side of the top part hold the rack in position. Two of these bottom pieces are enough for a 12 or 14-foot rack—a much longer rack will need one in the middle. Figure 2 shows one of the end pieces, with three ¾-inch iron pins projecting to fit in holes that are bored in the center of the end of each of the three boards that make the bottom of the manger. One end of the rack is shown in figure 3. The top and bottom pieces should be two inches square of good timber; bore ¾-inch holes, 9 inches from center to center, and fit 24-inch rods in all the holes but the end ones. One side of the rack is shown in figure 4; its construction is the same as the ends, with the exception that the rods are not so close together, and the end rods are longer than the others and draw out so as to be used to hold the rack together. The bottom pieces and manger may be of undressed lumber, but the whole rack that stands on the manger should be of good timber, like oak or ash, carefully dressed and cornered so as not to catch the wool. The rack complete is shown in figure 5. In use, the sheep put their heads through the rack, and eat from the manger much as cows do in stanchions. Mr. H. is satisfied that this rack will pay the expense of making, in one winter, rather than feed on the ground, as most farmers do in his section.

Fig. 1.—THE BOTTOM PIECE.

Fig. 2.—END PIECE.

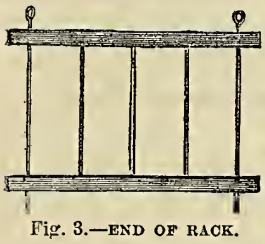


Fig. 3.—END OF RACK.

The Care of Sheep and Lambs at Yeaning.

It used to be considered a calamity to have lambs come in the winter or early spring. Three-fourths, at least, of all that were dropped before April died, and their carcasses were food for crows. The sheep took their chances in the same yard with cattle, and often had not even the shelter of a shed. This "slaughter of the innocents" was not strange, as they were dropped upon the frozen earth, and had little care of the flock-master. With suitable quarters, and care, it is not difficult to save winter lambs, and the advantages of an early start and an early market are so great, that many of the best sheep men, who cater for the butchers, plan to have the yeaning time commence as early as the middle of February. Even in the Northern States, to be successful with early lambs, it is essential that the sheep should have quarters by themselves. If left to run with other animals, they are exposed to many injuries, and not infrequently the lambs will be prematurely dropped, or still-born. The quarters should be in a sheltered position, with the full benefit of the sun. A large open shed facing to the south will do, or a barn cellar, if perfectly dry and kept well littered. One of the best flock-masters we know of has a barn about 40 by 20 for the accommodation of fifty sheep. He thinks it of a good deal of importance that the sheep have a board floor under them. This floor is kept well littered with straw. The sheep are fed in this barn, and kept in it at night, and during stormy and severe weather. There is a comfortable dry yard attached to the barn, and in this they have their liberty in mild, sunny weather. Another essential thing is the seclusion of the sheep at yeaning time, that the mothers may not be disturbed in their care for the lambs. A row of small pens upon one side of the barn, about four feet square, answers a very good purpose. The ewe should be kept in one of these pens for three or four days until the lamb has learned to nurse, and can follow the mother. The utmost vigilance is needed during the whole of the yeaning period. Six times a day is none too often to visit the flock, and look after the lambs. It should be the first thing in the morning, and the last thing at night, and in critical times, where many lambs are expected at the same time, it may be necessary to have a night watch and visit the fold every two hours. Ordinarily the ewe needs no assistance, and the more quiet she can be kept the better. Sometimes a little timely aid saves the life of both mother and lamb. Such ram lambs as are not wanted for service can be altered more safely when three or four days old than at a later period. Sheep want a portion of green succulent fodder during the winter. Nothing is better for this purpose than turnips.

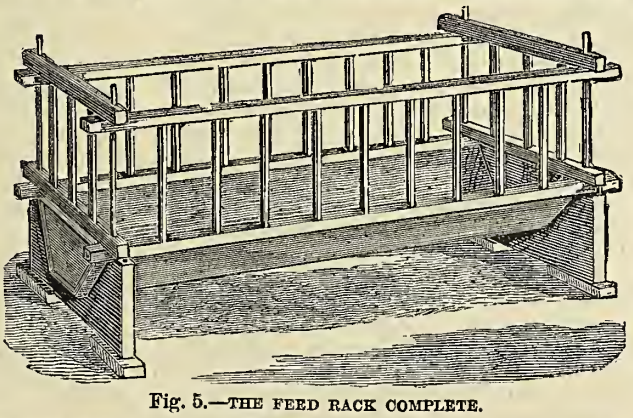


Fig. 5.—THE FEED RACK COMPLETE.

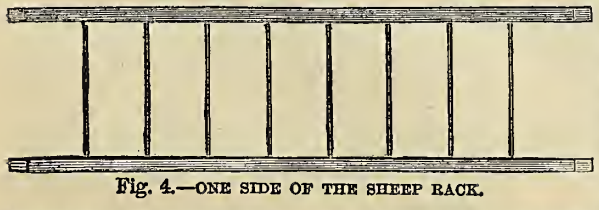


Fig. 4.—ONE SIDE OF THE SHEEP RACK.

Barn-Yard Manure vs. Artificial Fertilizers.—Unless the special wants of any given soil are well understood, barn-yard manure is much more reliable than any special fertilizer. The manure, when well made in the yard, furnishes all the elements, that are or can be lacking in a soil, and in a very acceptable form. But the question may be asked: "How are we to know the special wants of our soil?" This must be answered by direct experiments; and in putting this question to the soil it will be necessary to follow much the same plan as that proposed by Prof. Atwater in the *American Agriculturist* for April last—a plan that many are now following with satisfactory results. It is only by similar, thoroughly conducted experiments that the special wants of any soil can be discovered, and when once known, the remedy in special fertilizers is comparatively easy. The great question is: What does the soil need? This answered, more than half of the work of securing good crops is done.

Handling Heavy Hogs at Butchering.

Mr. Geo. W. Bronson, Oneida Co., N. Y., sends a sketch and description of his method of handling heavy hogs. Mr. B. writes: "It may be of use to some of your subscribers who may be (as I am) too old to enjoy a heavy lift on a 'porker' of four or five hundred pounds. Having a lot of this kind to handle from year to year, I made the arrangement shown in figure 1. The hogs are scalded in a box, which is an improvement over the half hogshead or large kettle, as it takes less water and scalds the whole hog at once, thus avoiding much lifting that is necessary when only half of the hog is scalded at a time." A table for scraping is placed beside the scalding box, and a track is arranged beyond the table and overhead, with two pulleys fastened to the rafters above, and near the ends of the track. A rope passes, from the hog to be raised, over these pulleys and down to a windlass attached to the floor as shown in the larger engraving. Mr. B. describes the use of the arrangement as follows: "The hog is taken from the pen, driven to or near the door of the dressing room, stuck and kept as near as possible in the same spot. When dead, take the hook attached to the windlass, and use it as a hog-hook. A man at the windlass soon brings the hog upon the plank at the end of the scalding box, where it rests until the water is ready, and is then put into the scalding box. When to be removed, the 'man at the wheel' soon lands the hog upon the table again. After being scraped, etc., the gambrel is put in place and the hook in the end of the rope placed near its middle, when it is hoisted up to the hook attached to the movable block. [The hook and sliding block is shown separate in fig. 2.—ED.] When the hog is finished off, the man turns the wheel, and the block with the 'porker' attached is moved along the track as far as it is necessary. The track is made of scantling, fastened to the joist above, leaving a space of two inches between for the passage of the hook which runs downward from the movable block. The blocks have a two-inch notch removed to keep them in place on the track. The size of the wheel-shaft is five inches; horse hay-fork rope and its pulleys will answer for the work above described."

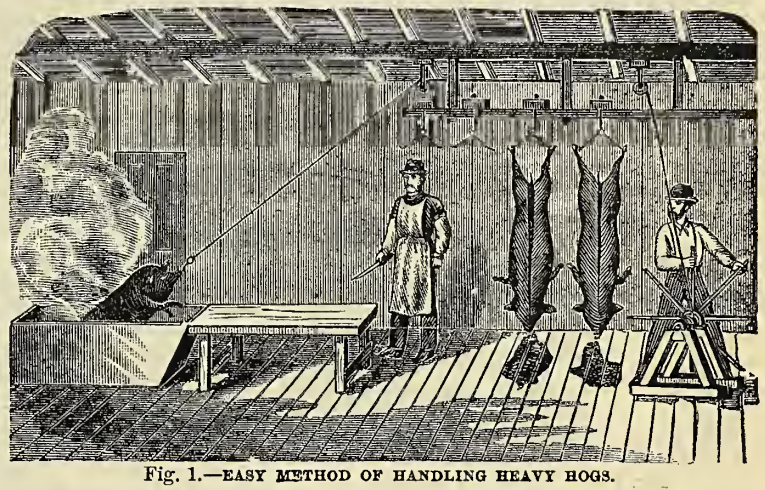


Fig. 1.—EASY METHOD OF HANDLING HEAVY HOGS.

Fig. 2.

Little Things of Great Moment.—It is a small matter to take the horses across the field for their water; it seems to cost nothing, yet if a farmer's time, or that of his hired man, is worth anything, it costs a great deal in the course of a year. It is a small matter to chop each day's wood upon the day it is used, and thus have it all fresh; but fifteen minutes in harvest time is worth more than in January; besides, there are vastly more economical methods of making fire wood than with an axe. It is a very little matter to tighten a loose nut, but it sometimes costs life and limb

not to do it. A pear tree here, and a peach tree there, cost so little that one is inclined to think they are of no account, but when the fruit is ripe they are appreciated. A single step from one room to another is "only one step," but the thought of a stairway made out of these steps during a life time, is enough to almost make a woman's back ache. Look well to the details, and see that the little things are right, for it pays in the end.

A Convenient Ash Box.

"W. M. V.," Glen Cove, L. I., sends a sketch and description of an Ash Box which he has had in use

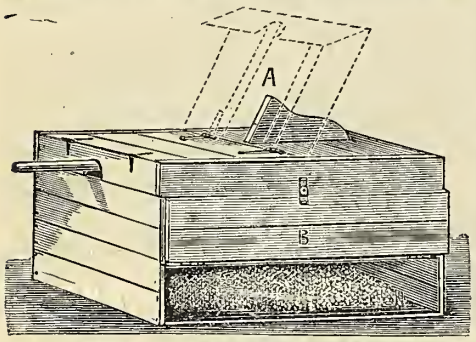


Fig. 1.—A CONVENIENT ASH BOX.

for a number of years. The Box can be made of cheap hemlock lumber, and of a size that the lumber at hand will cut without waste; seven feet in length by three feet in width, and four feet high, may answer in most circumstances. A lid, *A*, is provided occupying nearly one-half of the top, as shown in fig. 1, and also a side door, *B*, used for removing the ashes. Two strips of board are fastened within, and lengthwise of, the box, upon which the sifter or sieve rests as it is shaken, as shown in vertical view in fig. 2. The sieve, which is an ordinary one, costing perhaps twenty-five cents at the store, has a long handle fastened to it; with this the ash box and sifting apparatus is complete. The advantages claimed by Mr. V. for this ash box are: The ashes can be sifted without making any dust, as when the lid is closed the whole is confined within the box. The ashes and sieve are kept from exposure to storms, and the latter is always in place and ready for use. It dispenses with a disagreeable looking heap of ashes often found on exhibition the year round; and lastly it is cheaply and easily made. Any further description of the construction of the ash box or the method of working the sifter, is unnecessary. It may be added, however, that as the structure is of wood, care should be taken that there be no live coals among the ashes when they go to

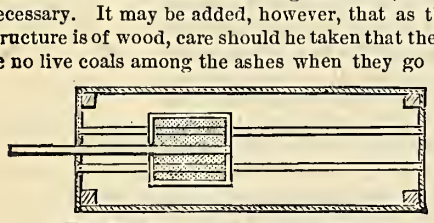


Fig. 2.—CROSS-BARS AND SIFTER.

the ash box. A coat of paint, or even whitewash, will add to the appearance of this useful and economical article and at a very trifling outlay.

Muck and Peat Pay.

The use of muck and peat pays abundantly, and we notice that the man who has once fairly experimented with these fertilizers in the compost heap rarely abandons them. They are soundly converted to the use of these absorbents, and every dry spell in summer and autumn finds them delving in the swamps and peat bogs. There is the fruit yard where we began using peat in the compost twenty years ago still fat and flourishing, and bearing abundance of the finest fruit every year. For ten years, peat, composted with stable manure, was applied without stint, and the roots have an abundant supply of food. There is the large farm and nursery of our neighbor that has been dosed with muck compost for twenty-five years, and he keeps straight on digging and composting as if it was the only way in which he could make his soil yield paying crops. No better nursery trees are raised in the State, and his orchards are models of clean, well-fed, productive trees. He has plenty of fruit when others fail. Tens of thousands of loads of muck have been incorporated with the soil, and the crops never fail from lack of nourishment. There are two brothers just beyond who follow fruit and truck farming, and have a yearly income of from fourteen to twenty thousand dollars a year from their two farms. We never fail to find, at this season of the year, a compost heap of enormous proportions close by their barns. The best farmers we know of who have the facilities, are using peat and muck largely, and are extending the use. This fact is about as good an advertisement of the value of these absorbents as could possibly be had. They are a good dressing for all light gravelly or sandy soils, without any amendments. They are most economically used probably for making compost heaps upon the fields that are to be broken up next spring. Any active green manure from the yards, stables, or the neighboring market town, are good for these heaps, in the proportion of one load of manure for four or five of the peat. The yard and stables should be abundantly supplied with them, and it is always time for more peat when the smell of ammonia is perceptible. Near the shore various kinds of sea-weed make an admirable compost with peat. Fish scrap is still better, either raw from the factory, or dried, and at least ten parts of peat to one of the scrap may be used to advantage. Oyster-shell lime, fresh from the kiln, makes an excellent compost with peat or muck. Wood ashes are still better, and those who live near villages are still able to procure these in considerable quantities. It matters little what agent is used to throw the heap into a ferment, and decompose the vegetable fibre. After twenty-five years of persistent use of muck and peat in the compost heap, we have abiding faith in their great value as fertilizers.

Trucks for Boats—Two Kinds.

"D. S. L.," Charlestown, Mass., has a boat which he keeps in a house a short distance from the bay,

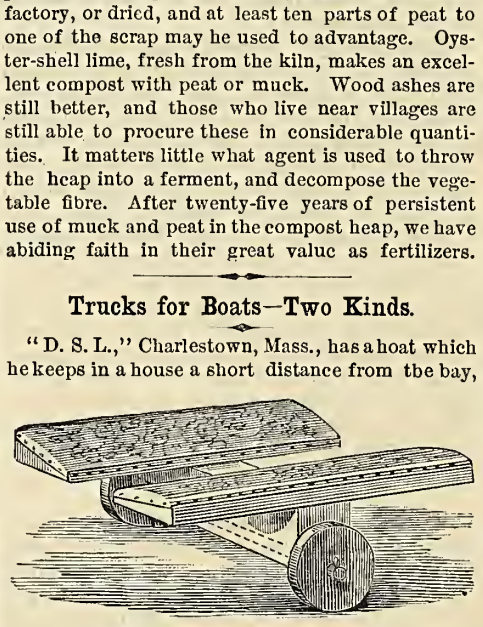


Fig. 1.—A TRUCK FOR A BOAT.

and employs a Truck for moving it from the storehouse to the water. This Truck is constructed as shown in fig. 1. The wheels are of maple, two inches thick and eight inches in diameter, united by an axle made of gas pipe, one foot in length. A piece of spruce, 4 by 4 inches square, rests upon the axle, to which the top pieces or "wings" are bolted. The wings are 3 by 4 inches square, built to approximately fit the boat, with a space left between them for the keel of the boat. The dimensions will of course vary, according to size of the boat. The wheels might be smaller, if the course to be run over is perfectly smooth, and larger if the roadway is rough. They should be quite near together so as to secure proper stability, and diminish as much as possible the tendency to twist around. The same gentleman sends another form of truck, which is very good when it is to be

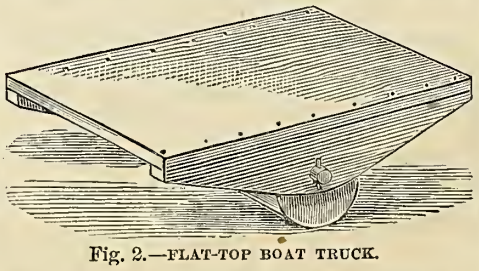


Fig. 2.—FLAT-TOP BOAT TRUCK.

used on smooth planking only. It consists of a board of a suitable size to give good support (12 by 18 inches) with a roller fixed beneath, something like a bread-board and rolling pin, as shown in fig. 2. With some such truck as this, or the one shown in fig. 1, a boat can be easily moved over any land that is reasonably smooth or other hard surface.

Another Small Barn.

"T. H. R., Jr.," Dayton, Ohio, having seen the "Plan for a Small Barn" in the September *Agriculturist*, page 349, sends a plan of his barn which

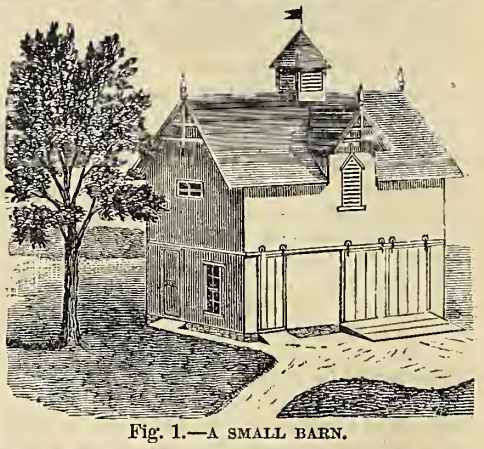


Fig. 1.—A SMALL BARN.

he has recently built. He thinks it preferable for a small place to the one given in September, "as it will cost less, being smaller and yet sufficiently roomy for two horses, or a horse and a cow and two vehicles, besides presenting a better appearance. It also obviates the necessity of going behind the horses when feeding, which is often desirable, as in families having no hired help the feeding is sometimes intrusted to the children." The outside appearance of the barn is shown in figure 1, and is certainly pleasing to the eye. The ground floor, figure 2, is 18 by 24 feet, 8 feet between joints. The carriage room, *C*, is 13 by 18 feet, with sliding doors 10 feet wide. The horse is led through the door *D*, from the carriage room to the stable. The box, *E*, containing food, connects by two "spouts" with grain bins in the loft. The hay "shoot" is shown at *S*, and is between the mangers. The harness closet, *H*, is placed under the stairway. A window, *W*, gives light to the feed room and the stalls. The loft, figure 3, is 6½ feet to the plates, and with a three-quarter pitch to the roof there is ample room for hay and straw. The barn is built of hemlock, sided with ⅞-inch dressed boards, 12 inches wide, and battened. It cost, complete and painted, $200.

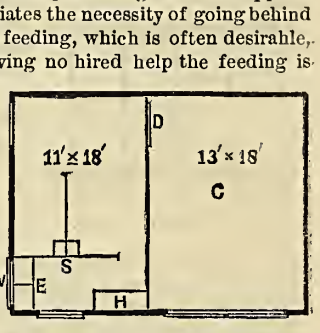


Fig. 2.—FLOOR PLAN OF BARN.

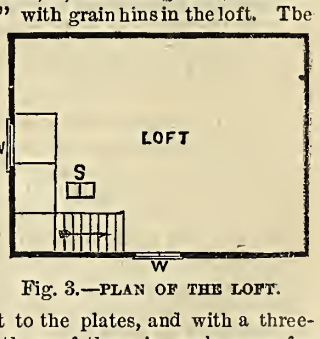


Fig. 3.—PLAN OF THE LOFT.

Dairy Farming consists of the feeding of cows for the production of the largest quantity of the richest milk, either for direct sale or partly for making butter and cheese. It takes the forms in summer of grazing on natural or artificial grasses, and housing in winter on hay and roots, or soiling near towns and cities where the food is grain refuse from the breweries and cut green fodder. The surplus stock of bull calves is sold for veal, while the best heifers are kept to maintain dairy stock. This is a very safe system of farming, there being immediate returns on a small or moderate capital invested. The expense of cultivation is small, the farm being kept seeded down with artificial grasses

requiring only the seeding implements, a machine for cutting and raking the hay, and a few of the smaller implements for the cultivation of roots to be consumed by the milch cows. The best breed of cattle to keep depends on circumstances. The Ayrshire is generally considered as giving the greatest flow of milk on a given amount of food. The milk of the Jersey, however, is the richest, so if butter and cheese making is the object they are the most profitable. The milking and management of cows is one of the most important considerations in dairying, and the utmost cleanliness should be preserved in everything about the stables and the milk house. ONTARIO.

Wooden Shoes for Horses.

Mr. M. F. Hughes, in charge of the large "Chandler Farm," near Lansing, Mich., sends sketches of the wooden shoes which he has used on his horses for the past year. Much of the farm land is low and of a miry nature, and after heavy rains it is impossible to use horses for mowing anddrawing the hay unless shod in the way here given. The horses are shod in the usual manner, and under each shoe a wooden plate is placed, made of elm plank, one and one-half inch thick, twelve inches long, and ten inches wide. The corks of the shoes, which should be pretty long, fit into small mortises in the wooden shoe. "The shoe is held in place by a hand passing over the front of the foot, below the quick of the hoof, and fastened to the shoe by a small bolt on each side of the foot, about two inches back of the center of the shoe. The band is made of light band-iron, one inch wide." With these "snow-shoes" the horses are able to go upon the miry or soft land with safety. The upper surface of the wooden shoe is shown in figure 1, and a side view, with the horse's foot in place is seen in figure 2.

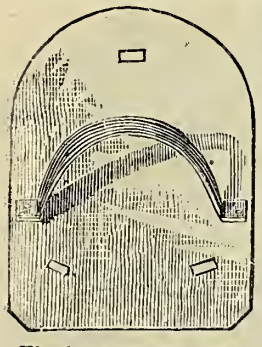


Fig. 1.—WOODEN SHOE.

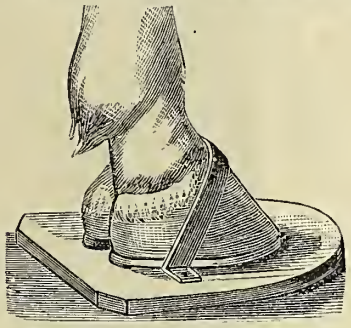


Fig. 2.—THE SHOE IN POSITION.

Young Chickens and Insects.

The practice of excluding chickens from the garden, especially in mid-summer, is bad both for the chickens and for the vegetables. The young chicks will not thrive in confinement, as in freedom, and the growing plants are in a good measure protected from insects by the chickens. We have never succeeded better with young broods than by putting them, with the mother, in the vegetable garden. The mother is kept confined in a coop, and the chickens have free access to her through the slats. She follows her instincts in scratching over the ground under the coop for worms and grubs, and after a few days the coop is pushed along to new soil. The chickens are regularly fed with scalded meal, or boiled screenings; they supply themselves with animal food from the garden. The chickens are too small to do any harm to plants that are well started, and yet they pick up an immense number of insects. The more highly a garden is manured, the more rapidly do insects multiply, and the greater is the need of birds and fowls to keep them in check. The chickens can go beneath cucumbers, squashes, beans, tomatoes, etc., and pick the eggs and worms from the underside of the leaves, where they are generally found. They eagerly chase every moth and bug that flies, and if one alights within striking distance, it is sure to be devoured. When the chickens are large enough to do injury to the plants, they are easily removed to other quarters.

Hints and Helps for Farmers.

A YOKE FOR A SUCKING COW.—"A Subscriber" sends a sketch of a device which he has found effectual in preventing a cow from sucking herself. It consists of two frames, one for each side of the neck, which resemble short ladders, and are made in much the same way. These frames are fastened on by means of a sheet of leather or heavy cloth over the top of the neck, and two straps which buckle underneath, as shown in figure 1. Brads, made of nails, are fastened in the rear ends of the horizontal pieces of the frames, which prick the cow when she bends her neck too far to one side.

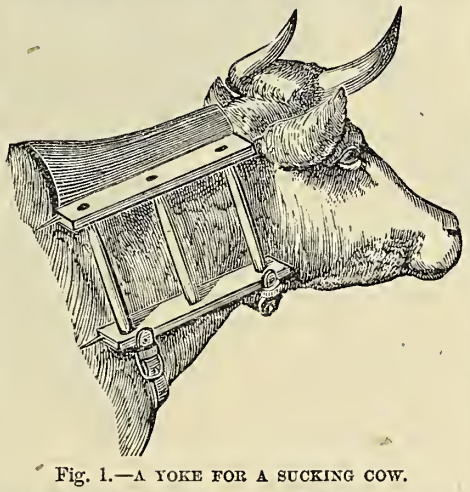


Fig. 1.—A YOKE FOR A SUCKING COW.

A GOOD STABLE TIE.—Mr. "D.C.K.," Carbondale, Pa., sends a model of a convenient and cheap Cattle Tie, and writes as follows: "Our Tie is made of three-eighths inch rope, which is braided into an iron ring, sliding freely up and down a post set close to the manger or feed-box. There is a knot or frog on one end and a loop on the other. The ends pass on each side of the cow's neck, and the knot is slipped through the loop which may be made tighter by twisting. Similar fastenings made of chains with snap hooks may be bought at the hardware stores, but such an one as is here described will last a long time and answer every purpose of a good Cattle Tie, shown in figure 2."

Fig. 2. THE TIE.

A SPRING CATCH FOR GATE.—"G.S.T.," Dutchess Co., N. Y., makes use of old wire springs in the method shown in figure 3. The catch is fastened by a single bolt, and is movable. The spiral wire is so fastened to the catch and post so as to allow the catch to descend when the projecting bar of the gate is passing over it, and be again brought up when the notch in the catch is reached. The catch is prolonged on the opposite side into a handle, and by lifting on it the other end of the catch is lowered, and the gate is ready to open.

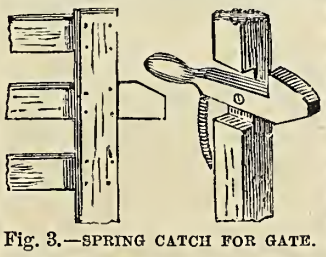


Fig. 3.—SPRING CATCH FOR GATE.

A BROOM-CORN SEEDER.—"S. E. V.," Bluffton, Ind., sends a sketch and description of an instrument for removing the seed from the brush of the broom-corn. It is made by taking a thin board about two feet long by ten inches wide, sawing into its end lengthwise at frequent intervals—the cuts being six inches in depth. The points of the strips are then sharpened, giving a saw-like edge, as shown in figure 4. The board thus made is fastened to a piece of timber so that it will lean away from the operator, and the instrument is complete. In using the Seeder, the brushes of broom-corn are struck upon the teeth and drawn towards the person at work.

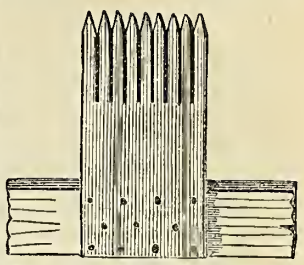


Fig. 4.—BROOM-CORN SEEDER.

A SIMPLE WAGON JACK.—"G. S.T.," Dutchess Co., N. Y., sends a sketch and description of "a light serviceable Jack, fig. 5 which suits perfectly." It is for use in oiling light buggies. It is a "stand," rather than a Jack, as the wheel is lifted by one hand while the instrument is adjusted with the other. It is made of pine, furnished with three rests of different hights, and provided with a bottom of sufficient size to be stable. Such a rest is simple, easy to work with light wagons, quickly made, and takes up but little space when not in use.

Fig. 5.—SIMPLE WAGON JACK.

GARDEN MATTOCK.—Desiring an implement for destroying weeds in my garden, I made a light mattock of an old ship carpenter's adze, by having the blacksmith weld a piece of cast steel to the poll, and sharpening it into a pick point. The blade was slightly straightened, being originally too much curved. The handle, made of tough ash, was first planed square, and of the proper taper, and then chamfered off, from near the head, until it was nearly round. The handle being forty-four inches long, makes this a desirable and easy tool for garden use. J. L. T.

Tansy Tea for Insects.—"C. C. K.," Naples, Ills., writes: "Our cucumber vines began dying very suddenly, soon after they came into bearing, and millions of fleas or Aphides were discovered on them. The adult insects were tiny black things, the young ranging from creamy white, through the shades of brown to black. One of my neighbors told me to sprinkle the plants with Tansy Tea, and it would save them. She had tried it on her vines and found it a success, while many of her neighbors had lost their vines. I had twenty-six hills to begin with, and about half of them had died, and were burned immediately, but one dose of strong tea (a three-gallon kettleful of Tansy sprouts covered with water and boiled), poured over the vines through the rose of a sprinkling-pot nearly cleared the vines. It was applied in the evening, and the next morning very few were discovered, and those few took their departure for parts unknown after another application. I could find none of the insects anywhere, dead or alive: not even on the ground under the vines."

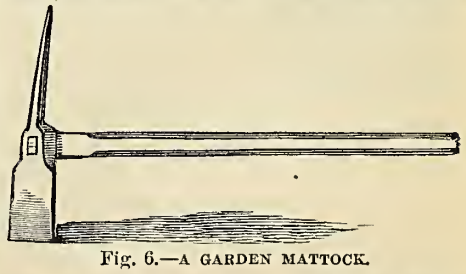
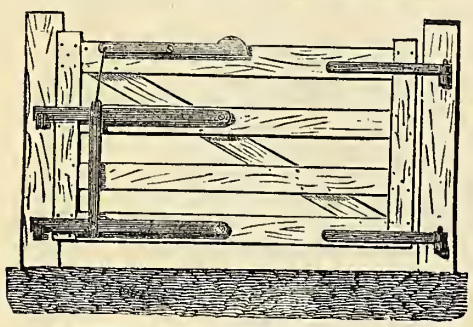


Fig. 6.—A GARDEN MATTOCK.

A Gate with Two Latches.

"J. B. C.," British Honduras, sends a sketch and description of a Double Latched Gate, and writes: "This gate is very convenient where hogs are to be provided for as well as cattle. Two latches, of the same size and length, and fastened on the gate the same distance from the end, are connected together by a strip of plank fastened with two small screws, so as to allow it to work easily; the catches are placed so that both latches are fastened exactly alike. If the latches are placed on the bars of the gate they are not so likely to be opened by animals. A very convenient lever for opening the gate while on horseback, is shown in the sketch; place a strip of plank level with the top bar of the gate, by



A DOUBLE LATCH GATE WITH A LIFTER.

means of a pin or large screw through the center. Connect one end with the latches by means of a wire, the other end having a raised part, so that by pressing down on this part of the strip, the latches will be brought up out of the catches."

Science Applied to Farming—LXII.

More About Roots of Plants.

The accompanying engravings illustrate the development and extent of the roots of the Sugar Beet. Like those of the potatoes and corn, in the late numbers of the *American Agriculturist*, they are copied in reduced size from photographs taken from nature by Dr. Thiel, in Germany. Figure 1 shows the very young plant, with only a few fine fibrous roots.—In figure 2, which is on a much more reduced scale, the fine roots have increased in number, and extended in all directions, while the main "tap-root," which makes the beet, has attained some size. In figure 3, which is still further reduced, the beet has grown much larger, and the roots have extended further and deeper. That less of the fine roots appear in this picture, is due in part to the difficulty of representing them in so small an engraving.—Figure 4 shows the matured plant, with the long root, which extended five feet into the earth, looped up and fastened, so that it might appear in the photograph. Here, as in figure 3, the finer roots do not appear.

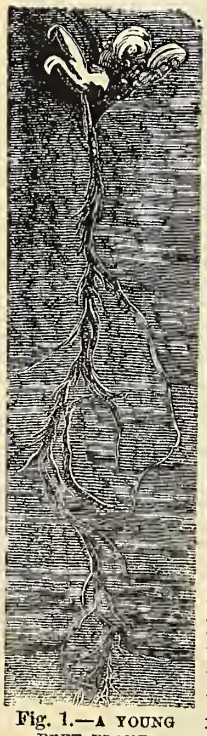


Fig. 1.—A YOUNG BEET PLANT.

Extent and Depth of Roots.

I have often been interested in noting the ideas most people have as to how far and how deep the roots of plants extend. The majority guess roots of grass and clover penetrate between five and ten inches, and are surprised to find that they reach several feet. I have some roots of timothy, clover, and other plants, dug from a very heavy clay soil, a good quality of brick clay, so compact and hard that a sharp knife in cutting it leaves a surface as smooth and shiny as it would on the end of a pine board. I have traced the roots of the timothy to a depth of two feet and four inches and the clover three feet and two inches. A number of years ago a very intelligent German farmer, named Schubart, made some very interesting observations upon the roots of plants as they grow in the field. An excavation five or six feet deep or more, was dug in the soil so as to have a vertical wall. Against this wall a jet of water was played by means of a garden sprinkler; the earth was washed away, and the roots of the plants growing therein laid bare. The roots thus exposed in a field of rye, in one of beans, and in a bed of garden peas presented the appearance of a mat or felt of white fibres, extending to a depth of about four feet.

Fig. 2.—SHOWING FIBROUS ROOTS.

Roots of wheat sown September 26th, and uncovered the 26th of April, had penetrated three and a half feet, and six weeks later about four feet, below the surface. In one case, in a light subsoil, wheat roots were found as deep as seven feet. The roots of the wheat in April constituted 40 per cent of the whole plant. Hon. John Stanton Gould, I believe it is, says that he "has seen the roots of Indian corn, extending seven feet downward," and Prof. Johnson states that "the roots of maize, which in a rich and tenacious earth, extend but two or three feet, have been traced to a length of ten or even fifteen feet in a light, sandy soil." Roots of clover, when growing in a rich, mellow soil, extend far, both laterally and vertically. Prof. Stockbridge "washed out a root of common clover, one year old, growing in the alluvial soil near the Connecticut River, and found that it descended perpendicularly to the depth of eight feet." Lucern roots are stated to reach a depth of twenty and even thirty feet. Alderman Mechi, in England, tells of a neighbor who "dug a parsnip which measured thirteen feet six inches in length, but was unfortunately broken at that depth."

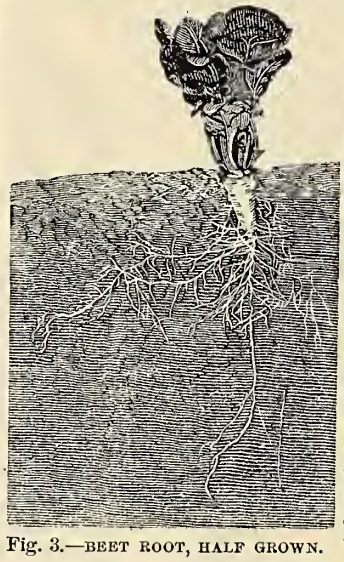


Fig. 3.—BEET ROOT, HALF GROWN.

Trees, of course, send their roots further and deeper. "A British officer in India reports that the roots of a leguminous tree is often dug in that country for economical purposes, and that he has seen an excavation sixty-nine feet deep made for such a root without reaching its lower extremity." Dr. H. A. Cutting, State Geologist of Vermont, writes me that he has examined the root of an elm, "dug out of the soil in Burlington, Vt., thirty-five feet below the surface." He also writes of seeing "elm roots taken from a wooden aqueduct in Randolph, Vt., 375 feet from the tree." The aggregate length of the roots of plants has been estimated by a number of observers. Thus, Dr. Hellriegel calculates the roots of a vigorous barley plant to have a total length of 150 feet, while the roots of another barley plant, in a coarse grained compact soil, amounted to only 80 feet.

The roots are as important to the growth of plants, as the stems, leaves and fruit. But they are covered up in the ground, where we can not see them, nor do we appreciate their forms and uses until we study them carefully. And because we do not understand about them we neglect and injure them. Often the soil is wrongly tilled, or left untilled, the best growth of the roots is prevented, and their power to gather food for the plant diminished. Fertilizers are frequently so applied as to be accessible to but few roots, and therefore are but partially utilized. Thus through error born of ignorance we lose the produce we ought to have.

Nor is the advantage we may gain from such study as that of roots, limited to the pecuniary profit it brings. Knowledge is valuable for itself, and its highest usefulness rests largely in its effect upon its possessors. I often think that one of the greatest benefits that can accrue to the tiller of the soil is that which comes with a clearer appreciation of the wonderful processes by which nature furthers his work. We are far too prone to "grovel here below;" and need to be lifted up into a clearer, healthier, intellectual atmosphere. The man to whom a clod of earth is a clod of earth, and nothing more, is himself a narrow man; but as the soil becomes to him a laboratory, where a Divine Intelligence has set grand forces at work, and keeps them in operation in rhythm with all of Nature's harmonies, he will find his thought enlarged, his life inspired, and himself made thereby a stronger, better, and more useful man.

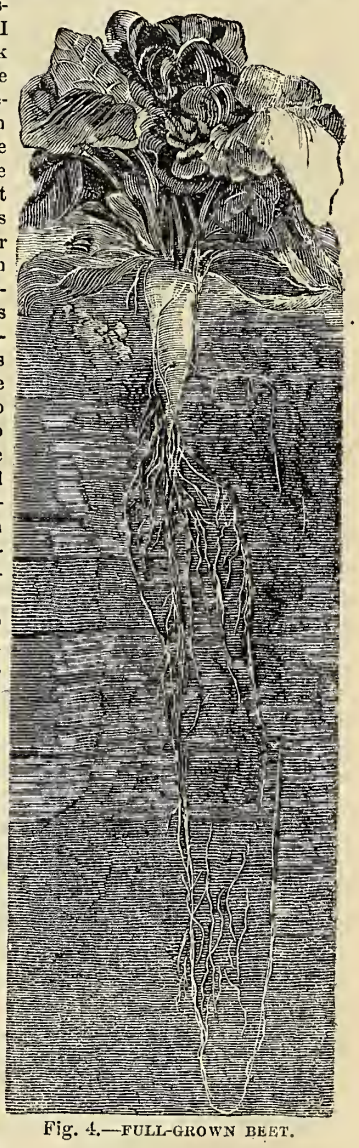


Fig. 4.—FULL-GROWN BEET.

But here I am at the end of my allotted space, and many interesting facts about roots, and their practical application in the tilling of the soil, the application of manures, and the rotation of crops, are untouched. More next time. W. O. ATWATER.

Wesleyan University, Middletown, Conn.

Throwing Sawdust into Rivers.—In answer to a question on this point, Professor Baird, Commissioner of Fish and Fisheries, writes us: "The practice is everywhere considered as extremely prejudicial to the fisheries of a stream, as the dust gets into the gills of the fish, and produces discomfort and disease; and settling to the bottom of the rivers, it covers the gravel and spawning grounds, preventing the eggs, especially those of the salmon family, from being properly treated."

The Sensitive Brier.

Southern readers of the *American Agriculturist* frequently send specimens of a plant with sensitive leaves, asking if it is the true *Sensitive* Plant, and if it is not, to give them the common as well as the botanical name. This is not the real Sensitive Plant, *Mimosa pudica*, but closely related to it, and is known as the Sensitive Brier, *Schrankia uncinata*.

THE SENSITIVE BRIER (*Schrankia uncinata*).

The true Sensitive Plant is an annual, about two feet high, with compound leaves, the leaflets of which close upon the slightest touch. This is now quite common in cultivation, being grown simply as a curiosity, and not for its flowers, which are not particularly attractive. The plant illustrated above is like the true Sensitive Plant, in having sensitive foliage. It is a perennial, found in sandy soil from Virginia southward; and is a long trailing vine, with prickly stems and very fine handsome foliage. The flowers come from the base of the leaves, and are in little balls about half an inch in diameter, of a pretty rose color, and appear abundantly throughout the summer and autumn months. For some time we had attempted to grow the plant in the garden, but every winter it was lost; in spring the root would be found completely rotted, and we began to think the climate was too severe to grow it successfully. Finally, a friend sent a root of it from Texas, and as a last resort, it was planted in an elevated portion of a little rockwork then just built. The plant grew finely the first season, and gave an abundance of flowers. The next winter proved a severe one, and in the spring we anxiously looked for the appearance of the Sensitive Brier. Nothing of it was seen, however, and it was supposed that the last attempt had resulted in a failure. But about the middle of May we one day saw a little shoot coming from the spot where the plant was put, and it soon started into a vigorous growth. For the last three years this plant has proved hardy, and though quite late in starting, has never failed to give an abundance of flowers. To those readers, who desire to grow this really beautiful trailer, it is suggested that they try the method of giving it a spot raised above the general level where water will not settle aronnd the root and cause it to rot. A "rockery" or rockwork is one of the least expensive methods of successfully propagating many of our wild plants; in fact, it makes a wild garden, when filled with an assortment of plants from the woods, that is highly pleasing to every lover of native flowers. For the cultivation of the shy, early blooming, and delicate plants, there is nothing that quite equals a pile of rocks with "pockets" of earth here and there.

TWO BLAZING STARS (*Liatris Chapmani*, (*a*), and *L. punctata*, (*b*).

Blazing Stars—Liatris.

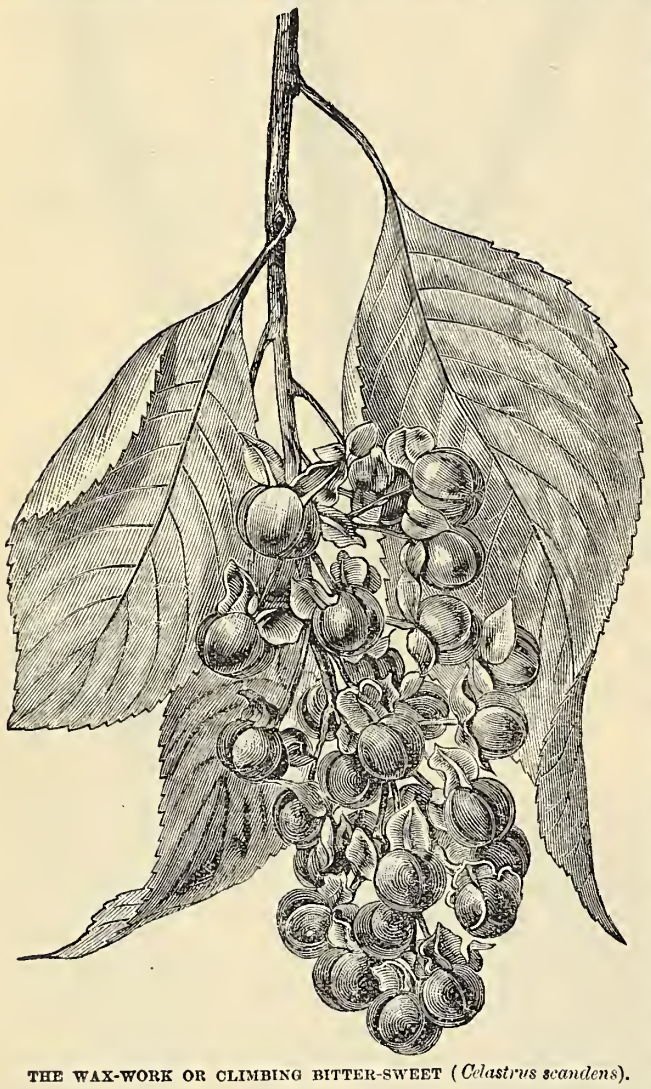
The increasing taste for the cultivation of Hardy Perennials has brought into notice many of our choicest of native flowers. There are no more beautiful wild flowers in any country than can be found in different portions of this broad land, and the *American Agriculturist* has been foremost in bringing into notice many of the most desirable kinds. That wild plants are extensively sought for in Europe, shows they have merit, which many of our own people fail to observe until they see them in the gardens, and learn that they are easily cultivated, and are as showy as many of the choicer and high-priced novelties. It is a lamentable fact that most of the native plants of the United States have been introduced through the medium of foreign seedsmen and florists. The genus *Liatris* contains several of the most beautiful of our wild flowers. There are about twenty species; one half of this number being natives of the Northern, and the remainder of the Southern States. We have had thirteen species under cultivation at different times, but none more showy than the two given in our engraving, *L. Chapmani*, (*a*), and *L. punctata*, (*b*). The former grows to a hight of two or three feet, forming a spike of beautiful pinkish-purple flowers two feet long. The flower stem is slender and graceful, and there is a neat and handsome look to the whole plant, which at once attracts the lover of beautiful flowers. A bed of this species commenced to bloom in September, and is still very fine at this date (Oct. 22). There is, however, one drawback to their cultivation, which may discourage some from attempting to grow it in the Northern States; it is not hardy enough to withstand our winters. The roots, like most species of *Liatris*, are tuberous, and before freezing weather sets in, they may be lifted and stored perfectly well in dry leaf-mould in the cellar. *L. Chapmani* is only found, as far as we are aware, in Florida. It was named in honor of Dr. A. W. Chapman, the zealous botanist of the Southern States, who has done so much to increase our knowledge of the plants of the State of Florida.

The other species, *L. punctata*, is found in Arkansas and Texas, and is so called from the punctate or dotted leaves. The root is tuberous, and considerably larger than in *L. Chapmani*, the leaves are long and narrow, very stiff and sharp pointed. The stems grow to a hight of two to three feet, and the flowering portion is often a foot and a half in length, densely covered with beautiful reddish-purple flowers. These flowers open about the middle of September, and last until the middle of November, the frost having no effect upon them. A row of these plants, nearly 200 feet long, is now in its prime, and it certainly is an interesting and beautiful sight to see these plants blooming while nearly all other flowers have entirely disappeared. This species, though a native of Texas, is entirely hardy in this vicinity, and withstands our severest winters without protection. Among other species of *Liatris*, which are worthy of cultivation, is *L. spicata* the earliest flowering species, blooming in July

with short, very dense spikes of purple flowers; this is followed soon after by *L. pycnostachya*, which grows in rich soil to a hight of five to six feet, with a flower-spike four to five feet long. Following this are *L. cylindracea*, *L. gramnifolia*, and *L. scariosa*, the last, a quite common kind, being very different in the flower cluster, appearing in the form of buttons, whence it is often called Button-Snake-root; then last the dwarf and very showy *L. elegans*. This grows to a hight of about eighteen inches, the flowers first being of a dark purple, finally changing to white. The above species, with the one exception noted, are all hardy, and we trust our readers will transfer some of them to their gardens.

The Wax-work or Climbing Bitter-sweet.

The Wax-work (*Celastrus scandens*) is one of our most beautiful climbers, both for its fine foliage



THE WAX-WORK OR CLIMBING BITTER-SWEET (*Celastrus scandens*).

and the showy, orange-colored, round pods which open by three valves in autumn and expose the scarlet pulp which surrounds the contained seeds. These little pods, of the size of peas, which hang in graceful clusters of 10 to 25, are very lasting, and when gathered at the right time—just before they open—will retain their attractiveness throughout the winter. Their beauty in home decoration is now so well understood by the people in cities, that scarcely a pod is allowed to fully ripen, so rapidly are they gathered up by boys and others, who sell them in small bunches upon the streets. Those who live where the wax-work grows and have never gathered it, should secure some of the fruit to use in winter bouquets. The accompanying engraving shows the form of the cluster and the opened pod, but, of course, fails to give the rich and attractive coloring of the different parts. The leaves of the Climbing Bitter-sweet vary from egg-shaped, to elliptical, with deeply notched or serrate edges, green above and lighter below. The flowers are inconspicuous, yellowish-green, and somewhat fringed. As seen growing over stumps and rocks, and into the tops of tall trees, the Bitter-sweet is a shrub full of grace and beauty, and especially so in autumn, when the highly colored berries, in rich clusters, stand out in bright contrasts with the dark foliage of the cedar, and other trees, upon which this climber is often found.

The Pear and Peach Blight.

BY PROF. T. J. BURRILL.

In very many examinations, during three years, of portions of pear trees suffering with the disease usually known as Fire Blight, I had noted the presence of the minute organisms which we commonly call Bacteria. But as these living things are so generally found in decomposing organic materials, and as they had never been considered active agents in producing disease in plants, whatever their relations may be to the contagious diseases of animals, little heed was given them in the search for a parasitic fungus to which the disease might be attributed. The failure to find such an agent, together with the gradually accumulating evidence of the aggressive character of Bacteria in animal diseases, finally called closer attention to them as the cause and not the consequence of this terrible scourge of the orchards. In June, 1880, careful investigations with this end in view were begun. The Bacteria were found to be the same, so far as a microscope with a power of one thousand diameters, and the best known definition could reveal, in every blighting portion of pear and apple trees examined. The change in the tissues was likewise found to be identical in all cases. The cell walls were left intact, and the protoplasmic material remained until the tissues began to shrivel from drying; while, on the contrary, the starch granules stored in the cells gradually disappeared. This was especially the case in the cells of the bark. My colleague, Professor Weber, determined for me that carbon dioxide, butyric acid and hydrogen were the products of the fermentation, which, as was readily proved, took place in the still living, but diseased bark. On July 1, 1880, experiments upon healthy trees were begun, by inoculating them with the Bacteria obtained from trees, in which the disease was in active progress. Most of the inoculations were made by inserting a sharp-pointed knife or needle smeared with the living Bacteria, into the bark of limbs upon healthy trees, and day by day careful records were kept of the results. In numerous instances the virus was applied to the exterior of the bark, or to uninjured leaves, without developing the disease in a single instance. The following table shows the per cent of the successful inoculations, as became apparent up to and including August 14, 1880:

No. of Experiments.	*Kinds of Trees.*	*Virus from Pear.*	*Virus from Apple.*
36	Pear.	54%	72%
29	Apple.	30%	Not tried.
4	Quince.	100%	Not tried.

The virus from the diseased apple tree is considerably more effective than that from the pear, but this most probably is due to a combination of causes now unknown. It, however, pretty clearly indicates the identity of the so-called Fire Blight of the pear, and that very prevalent disease in the Western States known as Twig Blight of the apple. The last is a misnomer, because the disease affects the trunk as well as the young shoots, and not unfrequently causes the death of the whole tree. But it does not appear to run from the diseased green shoots down the older portions of the tree.

The progress of the disease from the point of inoculation *was always slow*, never giving external, visible signs of its presence under eight days, and rarely extending after this more than half an inch per day. In some cases the leaves remained green three weeks after the bark of the shoot bearing them was thoroughly diseased. In other cases the bark of larger limbs was quite dead, yet the leaves, borne some distance above, remained green all

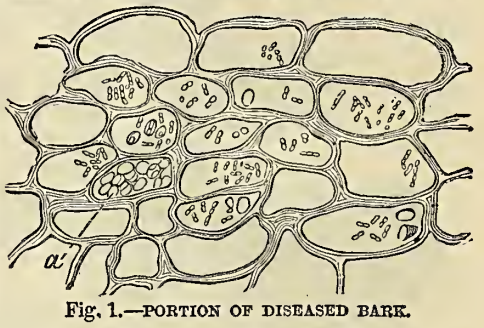


Fig. 1.—PORTION OF DISEASED BARK.

summer. This slow progress of the disease shows that the destroying agents are not carried in the circulation of water or sap in the tree, as, indeed, the teachings of vegetable physiology would also indicate. The Bacteria—shown in fig. 2, magnified 2,000 times—in some way not yet explained, pass from cell to cell. Figure 1, shows a thin section of the diseased bark from a pear tree, with the Bacteria in the cells, magnified 500 times.

Having recently received portions of peach trees affected with "yellows" from Michigan, I find plain indications of the similarity of this disease to that of the pear. The Bacterium is evidently specifically different, but operates in the same way, causing fermentation of the starch. The Lombardy Poplar is also destroyed in a similar way, but in this case the Bacteria follow wounds of insects.

It is too early to propose, with much assurance, remedial measures, but the slow progression of the disease in the tissues gives reason for hope. Antiseptic washes may be sufficient to prevent or cure. Pruning or paring away the infected parts, taking due precautions not to spread the contagion by the process, certainly is effective, and by studying the earliest symptoms of the malady, the cutting may usually be very moderate.

Fig. 2.—BACTERIA SEPARATED.

Cherries Once More.—During the past 20 years or so cherries have been very scarce, instead of being as they formerly were so abundant in their season that in many places they could be had for the picking. The present year has shown something like the former abundance, and those who had not cut down their trees in despair were rewarded for many years of failure. Whether the weather at blossoming time was especially favorable, whether the natural enemies of the curculio have essentially diminished its numbers, or both causes combined, the result has been most gratifying. In the city one could buy a basket at a reasonable rate, and the licensed venders offered fine fruit at 5 cts. for what they are pleased to call a pound. Our experience this year allows us to understand the great popularity of the "Early Richmond," with the western fruit growers. Our one tree, which in former years bore better than any other, was this year an example of fruitfulness, wonderful to behold; looking up into the tree one saw a canopy of fruit, the leaves being in the minority. This, by the way, is a most valuable fruit for cooking or canning, and when allowed to get dead ripe, is not to be despised to eat "out of

hand," as its acidity ripens into richness. If this fruitfulness is to continue, we shall be encouraged to plant cherry trees in abundance once more.

Notes from the Pines.

"The Pines," in view of which the present "Notes" are written, are not those of New Jersey, but of Old Jersey. The Island of Jersey is not quite as large as its newer name-sake—as it is but eleven miles long by half that in width. The Island is best known to Americans as the home of the Jersey Cattle (which many persist in mis-calling "Alderney,") and to Englishmen, in general, as the source of their early potatoes and some of their best fruits. As Paris is France, so is St. Heliers, Jersey, it being the port and business center, with streets crooked enough to gladden the heart of a Bostonian, and side-walks so narrow that the people walk in the road-way as much as on the walks along the sides. Soon after arriving, I visited

The Market of St. Heliers.

Were this the proper place in which to do so, I should try to describe this curious museum of things brought for sale by "The Toilers of the Sea."—I think that Cod was the only thing I recognized. There were eels as large as one's leg, crabs a foot across, and several other sorts of less dimensions; lobsters with spines on them, besides limpets, winkles, and other things that we do not have, and probably should not eat if we did.

The Vegetable and Fruit Market

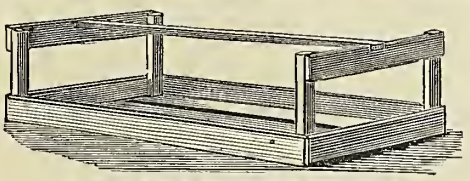
was very full. The vegetables were scarcely different from those in the London Market, but the fruits finer and much more abundant. Excellent apples, and pears, were in great plenty. The pear "Louise Bonne de Jersey," though not so well colored, is much better flavored than with us. Figs (fresh) very large and luscious, were cheap, to those who are fond of them; these ripen in the open air, and the trees are quite common all over the island; grapes, on the other hand, need glass, and there are some immense vineries, much of the fruit from which goes to London. I bought such Black Hamburgs for a shilling (24 cents) a pound, as we rarely see in our fruit stores for $1 per lb. Blackberries grow wild in plenty, and just now illustrate the old adage that "blackberries are always red when they are green."—The few ripe ones were very small, consisting of but few grains, badly shaped, and quite inferior in flavor to any of our wild kinds. Our delicious cultivated sorts do not appear to be known here or in England. It is doubtful if there is enough heat to bring them to their full perfection, but I think they should be tried.

Farming and Jersey Cattle.

The cattle, at least, do not come under the head of horticulture, and it is likely that something may be said at a future time on both these topics by my associate, as occasion offers. The farming is mostly, in fact, market gardening on a large scale. Any farmer, when asked what is his principal crop, replies "potatoes." For several years this has been the "money crop" of the Island, and it is cultivated by manuring quite as highly as do our market gardeners for their crops.

The Treatment of Seed Potatoes

is quite peculiar, and might perhaps be tried by some of our growers of early potatoes, especially in those Southern States where the crop is an important one. Already the "seed" is being prepared for next spring, and we see them everywhere in large quantities. Potatoes of medium size are selected and placed in boxes, usually made for the purpose, though other boxes are some times employed. We saw at several places in the town the boxes, or rather skeleton crates, exposed for sale, I think, at a penny each, but am not sure of the price. A rough sketch will allow the artist to represent it. It will be seen that it is a shallow box, 24 inches long, and 12 inches wide, with sides 2 inches high; it is of about ¾-inch stuff, the bottom being of three slats of similar material, with nearly ¾-inch spaces between them. In each corner of this box is a post 7 inches high and ¾-in. square; a strip connects the posts at the ends, and across the top runs a lengthwise strip one inch wide by ¾ thick; this is let into the end pieces so that it is flush at the top. The potatoes are set "seed-end" up in these boxes as closely as they can be packed, taking care to put those of a size together. At first the boxes, when filled, are put in any convenient place in the open air, fully exposed to sun-light, in order that they may become thoroughly greened. As cooler weather comes on, they are taken into the house, and stacked up in some suitable place. The peculiar form of the boxes allows of putting one



A CRATE FOR SPROUTING POTATOES.

upon another—as many as may be desirable—and still have sufficient ventilation and exposure to light. By the time the weather will allow of their being planted, strong sprouts about two inches long will have grown. The planting is done by setting the potatoes upright in the furrow in the same position they had in the box; great care is exercised in handling while planting, in order not to break the sprouts. As the planting may be delayed until all danger of frost is over, the potato, when placed in the soil, is ready to go on and grow at once.

Much is Gained by this Method.

In planting in the ordinary way, the potato remains for a long time in the soil before the vegetative process begins, while by this method all the preparatory work is done in advance, and growth, having already begun, is at once continued. I hope that some of our growers will try this Jersey method and report the results. I am aware that cutting the potato some weeks in advance of planting, and placing them in a warm room to "sprout" is not new with us, but the method here described, beginning in the fall, and inducing a slow and sturdy growth of sprouts is somewhat different, and seems to me to have some advantage over that manner of preparing the "seed," and is worthy of a trial.

The Yield of Potatoes per Acre,

under the method practised in Jersey, is very difficult to ascertain, as their measure of land (*vergee*) and their measure for potatoes (*cabot*) are quite unlike ours, and besides, they estimate the yield per vergee in the £. s. d. it returns, rather than by the measure of potatoes it gives. A rough calculation shows that their potato crop returns from £40 to £90 per our acre, which is not far from $195 to $435 per acre; in some cases the returns have been as high as £120 per acre, or about $580. Though considerable sums are laid out for guano and other fertilizers, these are not all chargeable to the potato crop, as a second crop, usually turnips, is taken the same year, and in their rotation a crop of wheat is followed by clover, and all these are benefited by the heavy manuring given the potatoes.

Sea-Weed, or "Vraic,"

is largely used as a manure, both spread at once on the land, and put up in heaps to form compost. While the drift sea-weed can be collected at any time, the gathering of that which is attached to the rocks is regulated by law, or custom, but, I think, by law. I much regretted being a few weeks too late for the "Vraic" harvest, which is said to be a festival of peculiar interest upon the Island.

Orchards are Numerous,

but the trees are generally in bad condition, the moist atmosphere encourages the growth of those obscure vegetable forms to which our orchardists give the collective name of "Moss." Here the bark of the smallest twigs is covered with a greenish growth, which must essentially affect the health of the trees. Besides, the orchards are almost without exception in grass, and used as pastures for cows. When the cows are pastured they are rigged with a curious halter of rope and two pieces of curved wood; a part of this affair, which cannot well be described, goes over the head, and a rope from each side of it is tied around the fore-legs of the animal, the object being to prevent browsing on the trees. While the cows, with this halter, can graze easily, they can not lift their heads.

Private Gardens

are often very fine, and there is scarcely a farm-house, however unpretending, but has a small piece of ground in front, tastefully planted and well kept. The English exclusiveness in such matters prevails here to a great extent. The fine places are generally surrounded by a wall, often 8 or 10 feet high, and only a glimpse of what is within is had through the open gate. Pastures, now the last days of September, are as fine as they are with us at any time. It will be supposed that the lawns are in correspondingly good condition. More perfect lawns cannot be imagined anywhere. A favorite tree for planting on lawns is the

Auraucaria Imbricata, or "Monkey Puzzler,"

a most formal tree, not hardy with us, but which grows here in great perfection. We plant Sweet Peas, and the July heats finish them. Here in Jersey, they are still in abundant bloom, often growing to a great hight. Perhaps these, more than anything else, most forcibly impressed upon me the great difference between Old and New Jersey. This difference is further illustrated by roses in full bloom. The Lemon Verbena (*Lippia citriodora*) here forms a tall, hardy bush. Camellias are hardy in the open air; I saw one that had not failed to bloom abundantly for 20 years. There are many other things which show how mild a climate this Island enjoys—among them the Laurestinus, which, with us, even a mild winter would kill, is seen here everywhere just coming into flower; in one case I saw two bushes 10 or 12 feet high, trained to form an arch over a gate-way. Here and there we are reminded of home by some American plants. In several gardens I have seen large clumps of our

Cardinal Flower,

Lobelia cardinalis, forming a mass of scarlet such as few plants can equal. It may be that the fact that our common things are thus appreciated abroad may induce some of our nurserymen to turn their attention to the growth of our native plants. One sees on every farm a larger or smaller patch of

The Jersey Cabbage.

Several years ago our seedsmen offered the seeds of this as "Jersey Cow-kale," and from this I inferred that it was used in Jersey as feed for the cows. The fact is that it is never fed to cows, but is grown especially as food for pigs. It is a Kale rather than a Cabbage, as it never heads. It naturally has a tall stalk, but as the lower leaves are picked off for the pigs, the stalk goes on increasing in length, and it is not unusual to see them 6 and 8 feet in hight. The stalks, when ripe and seasoned, make excellent walking-sticks, being both strong and light. In St. Heliers, there are several shops with signs showing that the owner is a

"Manufacturer of Cabbage Canes."

Mounted with a ferrule, and varnished, they are one of the specialties of the Island, and few strangers visit here without carrying off one or more "Jersey Cabbage Sticks." In some cases they are mounted with silver heads. Another reason for growing this Cabbage, is for its supply of leaves in which to pack butter. The neat pats of Jersey butter—and how delicious is Jersey butter at home!—are always sent to market upon a leaf of this gigantic Kale. It is with regret that we leave this charming Island. In conclusion, I would advise every one who visits Europe to make a visit to Jersey. I know of no other place, at home or abroad, that combines so many attractions for those who would see rural life in its highest development.

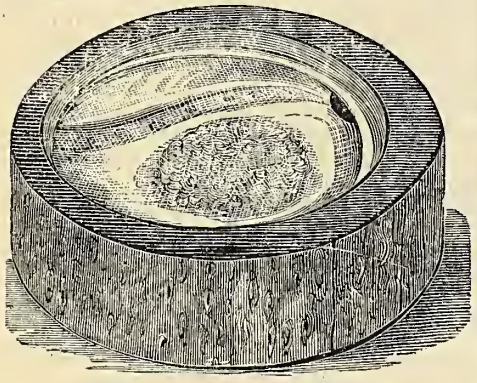
The Farmer's Garden.—The common idea among farmers, that manure and labor spent on the garden is nearly thrown away, is absurd. The cultivated field pays just as we invest labor and manure upon it. The garden, with more thorough cultivation, and a greater variety of crops, pays still better. It brings its offering to the table, in some shape, every day in the year. As the frost comes out of the ground in the early spring, it yields horse radish, artichokes, and parsnips. With the first genial days of April and May, it gives you pie-plant and asparagus, etc., etc.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

A Shell Catch-All.

Not long ago we saw a man on Broadway selling sea shells of various kinds, many of which were



A CONVENIENT CATCH-ALL.

arranged to serve some useful purpose, and at the same time possessed considerable beauty. One of these was a Catch-all, shown in the accompanying engraving, which has been made from a sample purchased for ten cents. The shell has a "setting," apparently in the end of a birch log, but it is not so. A piece of thin pine makes the bottom, which is of the size and general shape of the outline of the shell. Another thin piece of wood is then wound around this bottom and the edge of the shell, and fastened in place by glue, and covered with a strip of birch bark. The irregularities of the rim are filled in with some fine cement and given a coat of varnish, when the shell is "set," and the dish is complete. Such a mounted shell is quite handsome, and is so cheaply and easily made that it is within the reach of any one. It may be used for receiving burnt matches, and as the lining of the box is not combustible it is perfectly safe. Should there be a person in the house who smokes, he will find this Shell Catch-all convenient for receiving the ashes of his cigar, etc.

A Linen Wall-Pocket.

The convenient Wall-Pocket shown in the accompanying engraving is made of pasteboard, well-starched gray linen, a braid of any desired color,

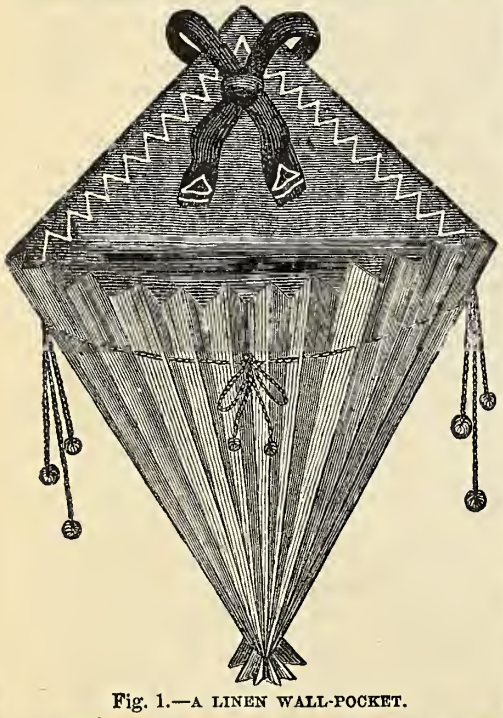


Fig. 1.—A LINEN WALL-POCKET.

and embroidery work to suit the taste. The pattern is made in this wise: Make a square on a large piece of paper, so that one half of it will be the size desired for the upper part of the back of the holder or pocket. Draw diagonal lines from opposite corners, prolonging the perpendicular one half its length beyond the lower corner; connect this end with the ends of the other diagonal, and the outline of the pattern, as shown in figure 2, is complete. Cut the pasteboard after this pattern, and cover with the linen and braid, and stitch as one may desire; in fact, the limit to this decorative needle-work depends upon the taste, patience, and ingenuity of the designer. The cover should be so made that it can be removed from the pasteboard when it requires to be washed. The front part is made of the linen folded as in making

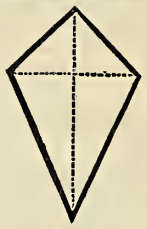


Fig. 2.

a newspaper fan, through the upper part of the folds of which a cord is passed, and fastened to the pasteboard back at the sides. The bottom and sides should be firmly fastened to the back, and the wall-pocket is ready to be hung up by a ribbon fastened with a bow, as shown in figure 1. With these general directions, any one may make a wall-pocket that will be both ornamental and useful.

Home Topics.

BY FAITH ROCHESTER.

Hard Water and Soft Water in Cooking.

I have been reading the testimony of Alexis Soyer, the celebrated *chef de cuisine*, concerning the effects of hard and soft water upon food cooked with either. He gives the preference in all respects to soft water, unless in the one matter of cooking fresh meat with a view to making it as white as possible. He says that hard water seems to contract the pores, and solidify the gluten, so that he believed it to be impossible to extract the true flavor of meat with hard water. In boiling salt meat, soft water extracts more salt than hard water, and makes the meat more tender. Soft water evaporates one-third more rapidly in boiling, and cooks every thing in less time. He said that hard water shrivels greens and peas, and affects leaves more than roots. Potatoes boiled in hard water are harder and whiter than those boiled in soft water, and more time is required for the process. In cooking dry vegetables, he says, we must allow one-fourth more time for hard water. He had no doubt that soft water makes the best bread. He said that bread made with the same flour and the same yeast, and by the same bakers, is much inferior made with hard water than when soft water is employed. He made many experiments with tea, and decided that soft water draws out the flavor of the tea more fully and more rapidly than hard, so that for a "good cup" one must take more tea when using hard water than when using soft.

Washing Done Out of the House.

I am obliged to hire my washing done now, and am glad to have it taken out of the house, and returned to me, unironed. My washing is so large that a woman washing in the house, calls it a day's work, and charges accordingly. She may do some cleaning up, but taking the spatters on the wall, and the muss she makes while washing, and the extra labor of boarding and waiting upon her, into account, I think the work she does beyond the actual washing is not more than the trouble she makes me. My floor, being painted, I do not wish her to scrub it, and am able to wash it myself. It seems good to have the work all done out of my sight, the clothes not only hung out to dry, but safely basketed, whatever the weather. I pay no more money in the latter case than in the former, and in both cases furnish soap and starch.

Starching Made Easy.

My washerwoman objects to making two kinds of starch, and prefers to starch all of the clothes with fine laundry starch. Finding that she used half a package of "silver gloss" starch in the first washing, where she only had two shirts and two skirts with a few collars, but three dark calico dresses, and several large aprons and baby dresses and aprons, I proposed to her to make only flour starch and use that for the calicoes, etc., and I would starch the white clothes. She is unwilling to do so, because it takes so much *time* to make flour starch, or to rub out the lumps of flour to perfect smoothness. My sympathies are with her, and I yield the point, mentally, resolving to buy starch by the large, or wooden, box, and to provide large dark gingham aprons for the children, and to give up calico dresses until spring, so that the number of pieces will be diminished. I never feel that I can stop to make flour starch when I do my own large washings, and unless I can get the starch made by another person, I make enough fine starch for all the pieces that need stiffening, or omit altogether to starch some of the oldest every day clothes. To be sure the laundry starch costs a trifle more, but dear me! *Time* is money, and health too, and good temper and home happiness besides.

I think it the best way to stir the starch, sufficiently moistened, into the boiling water, instead of the more common way of pouring boiling water into the moistened starch "stirring briskly to prevent burning." I now make both flour starch and laundry starch in this same way. There is less liability of burning and more certainty of having the whole equally and well boiled. To the fine starch, when boiled, I now add a little starch gelatine, as it makes the starch less liable to stick, and easier to take a gloss in ironing. There are other preparations equally good I presume. But the latest and simplest thing I have heard of, in the way of starch, is *skimmed milk!* I am assured by a friend that she has often tried it, when she had only a few calico pieces in her washing. Dip the article into sweet well-skimmed milk, and it will dry as stiff (a little stiffer I should think) as common flour starch would make it. If there is cream in the milk it will grease it, of course.

Baby's Diapers.

It has been my custom to make outside diapers of large squares of unbleached cloth, fold double squares of old cotton inside those. This puts the thickness where it needs to be, and relieves the hips of too warm a burden. To-day I saw, in a friend's house, large half squares of cotton flannel for the outside use with long "towels" of the same material to fold inside. If I had another supply to make for a child large enough to run alone, I should make such half squares of cotton flannel if for winter, and of strong cotton cloth for summer. Then I would lay four small plaits, two on each side, a few inches of the hypotenuse of the triangle, or about four inches apart. I would stitch these down an inch, folded straight toward the right angle of the triangle (you understand this geometry, I trust), and so make a kind of band to the diaper, over the hips and behind. I fancy this would make the garment stay on better, without too great tightness, and that it would be more comfortable for the child. It is somewhat like the diaper drawers, but keeps its necessary character by fastening snugly with the safety pin or pins.

Under Suits for the Smallest Toddlers.

For children who still wear diapers, I know of nothing better, except perhaps the nice (and expensive) long-sleeved, long-bodied, high-necked knit shirt, than those long-sleeved rather loose, soft flannel waists, reaching over the bowels to the diaper. These button behind and have several buttons around the bottoms, to which may be buttoned open underdrawers or warm flannel panties. I used to make little breeches running up to a point at the top, out of the way of the diaper, and fastened to the skirt waist on each side, by one button. That is a good way, but now it seems to me, that those I must make immediately, will be wide enough at their very tops to button clear around the waist, meeting in the front and back, but still separate, so that one can be removed if necessary, without disturbing the other. I have a mind to make these inner leggings of old, white, ribbed merino stockings, or the better part of merino underwear, snug enough at the bottom to go inside the stockings, reaching to the ankle-bone, and held in place by a strap under the foot. The baby will not be too warm in winter weather with these and my old-fashioned colored flannel knee breeches too. The

latter come only over the knees, fulling a little at the bottom. In speaking of old merino stockings and underwear, I most certainly do *not* mean that which is fulled up, "thick as a board." There is no necessity for reducing soft flannel to this condition, and as few people know how to avoid it, I may tell them onee more in a later paper.

Animals in Needle-Work.

The accompanying engravings illustrate how some of our domestic animals may be brought out with the needle and thread upon articles

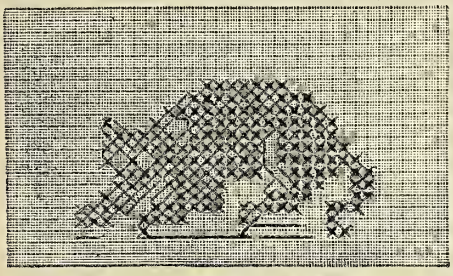


Fig. 1.—A CAT FOR A PATTERN.

of clothing, beddings, mats, etc. The sizes of the squares and that of the thread will vary according to the nature of the work, but the character of the stitches and the relation of the parts will remain the same for each particular animal. A cat or "rooster" on a tidy will not be as large, of course, as upon a floor mat or blanket. The patterns here presented are of but two of the many familiar animals that may be thus developed with the needle

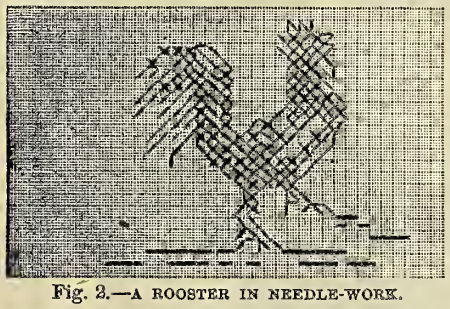


Fig. 2.—A ROOSTER IN NEEDLE-WORK.

and thread. Others will suggest themselves, and give an opportunity for the exercise of a considerable ingenuity on the part of the designer.

Notes and Queries.

TREATMENT OF COLDS AND CROUP.—We believe in "every one to his trade," and in all cases of severe illness or accident call in the skill of one who makes a business of studying the human system and its disorders. Yet many, especially in frontier settlements, find it impracticable, if not impossible, to always obtain reliable medical advice. We offer a few hints, that may be serviceable in ordinary, slight troubles—*Colds*, taken in hand promptly, are easily remedied. If they are allowed to cling to one for a few days, they usually "run their course" of a couple of weeks if not much longer. For a slight cold accompanied with sore throat, a simple remedy, often effective, is a teaspoonful or more of powdered Chlorate of Potassa, in a tumble of water—all that will dissolve. A teaspoonful of the solution is to be gargled in the throat and swallowed—repeating it every hour or so. A sudden, severe cold is most often broken by a gentle physic of Calcined Magnesia or Castor Oil, with warm foot bath, and avoiding any chill or draft of air for a day or two. For filling up of the lungs and much gathering or coughing we use a simple cough syrup, made by mixing equal quantities of Syrup of Ipecac, Paregoric, and Castor Oil or Sweet Oil; shake well, and take from half to a full teaspoonful, according to age, three or more times a day as needed. A warm sweat is good, *if* great care be taken to have no chilly feeling for a few hours after. If one does not cool off *very gradually*, more cold will be taken. *Croup* is, in some families, much dreaded. Its guttural cough is unmistakable after having once heard it. When first noticed we administer Syrup of Ipecac—10 drops to an infant, up to 20 drops to a large child—every hour or so until vomiting is produced. Then use the above cough syrup three times a day or more if needed. If more than a slight attack the Syrup of Ipecac is accompanied with foot baths as warm as can be borne, with a tablespoonful of good Mustard stirred into each gallon of water. In addition, the chest and neck are well bathed with Camphorated Oil or Volatile Liniment, and covered with flannel lined with thick cotton batting. It is well where croup is feared, to keep ready for use a flannel cut to fit the chest and neck, with tying strings on the neck corners, and with thick cotton batting stitched on to the under side. These remedies have proved effective in most cases of ordinary croup. If at all severe and not yielding immediately to the above simple home treatment, a physician is called in.

CREOSOTE FOR BRONCHITIS AND CATARRH.—When going from Switzerland to Italy *via* Mont Cenis, some years ago, the writer contracted a sudden severe cold, which, in the chill air of Turin, soon brought on a severe attack of Bronchitis. We hastened over to the genial air of Genoa, but it afforded little relief, and the advice of Dr. Paccioci, Professor in the noted Italian Medical College there, was called in. He prescribed a very simple remedy, which was at once effective, as it has been with many others to whom we have since recommended it. Put into a pint or larger bottle about three gills of water, and add two drops of good Wood Creosote. Shake very thoroughly, take a mouthful, gargling it awhile in the throat, and swallow it. Repeat this frequently, so as to use up the mixture in the first 24 hours, always shaking well before taking. After the first day, use *three* drops of Creosote and the same amount of water during 24 hours, so long as it is needed.—The same mixture has often proved very useful in *Catarrh*. In this case a handful or two of the well-shaken Creosote and water is snuffed up through the nostrils until it reaches the throat and is spit out. A tablespoonful or more is also gargled in the throat and swallowed. As Catarrh is an inflammation of the nasal passages, accompanied with a mucus deposit, the creosote, which is largely carbolic acid, would seem to be useful here just as dilute carbolic acid is effective in cleansing any putrid sores. Catarrh is the result of weakness, and is promoted by a cold. A toning up of the system and any simple remedy like the above is effective, unless the Catarrh is severe and of so long continuance as to have permanently disorganized the nasal cavities. It is folly to spend money for the much vaunted and much advertised catarrh remedies, which are usually the sheerest medical quackery.

PLANTS IN POTS.—As the cold weather comes on, and the choicest plants are being taken in, let it be remembered that you are limiting the "feeding ground" of the roots, and therefore the potting earth should be rich. Newly-potted plants require much water, especially if they are taken into a room where the temperature is moderately high. Besides food and drink, plants require sunlight and air. With proper care—and it is not great when done at the right time—a fine collection of plants can be kept through the winter and be a source of delight, with their fragrant flowers, in contrast with the apparently lifeless vegetation out-of-doors.

A "HORSE SHOE" PICTURE FRAME.—The horse shoe with its "Good Luck" is now a familiar sight in many articles of household ornament. The picture frame, shown in the accompanying engraving, is sketched from one we saw at a recent fair. It was made from a thin strip of holly with a scroll saw. The frame may be made of any desired size—the one in question being for an ordinary photograph. A mantle ornament of this kind, with variations in detail of cutting to suit the taste, can be made by any one with a scroll saw and a little skill.

HORSE SHOE PICTURE FRAME.

A Handy Folding Table.

Mr. James H. Ten Eyck, Auburn, N. Y., sends a model of a Folding Table, from which the accompanying engravings have been made. Concerning the table, Mr. Ten Eyck writes: "It may be made of any desired size, but for the purposes for which it is most generally used, namely, for ladies' work,

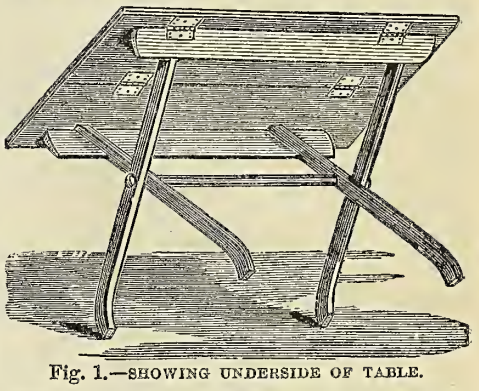


Fig. 1.—SHOWING UNDERSIDE OF TABLE.

sewing, as a writing, or invalid table, a very convenient size for the top is two by three and a half feet, and two feet two inches high. Black walnut, ash, and chestnut, are the most suitable kinds of wood. The top should be about five-eighths inch thick, with bevel or rounded edges; the legs, one by one-and-three-fourths inches, rounded edges; the strips or wings at top of legs, one-half by three inches, and three feet two inches long. The round between the intersection of the

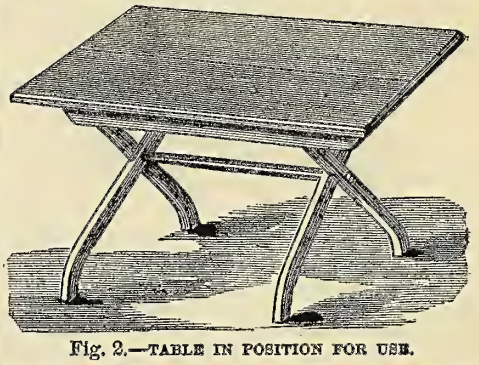


Fig. 2.—TABLE IN POSITION FOR USE.

legs is about an inch in diameter. The wings should be hinged to the top, two and one-half inches from the outside edges, and let into the edges of the legs—flush. The spread of the legs on the floor should be about twenty-two inches for a table two feet wide. Iron or leather washers may be placed between the legs where they cross, to prevent their touching in folding. In cutting the rod, or 'round,' see that it is long enough to crowd the legs apart so that they will stand a little bracing. This will stiffen the table and make it stand firmly on the floor. This point is quite important, and it does

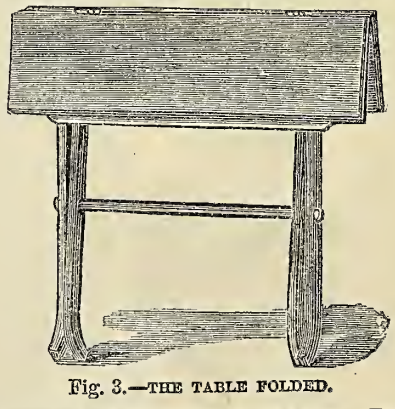


Fig. 3.—THE TABLE FOLDED.

not interfere with the folding in the least. To fold the table, simply lift it by the ends. To carry, or move it without folding, lift it by the sides. When folded, it is of a convenient hight to carry, and occupies only four or five inches against the side of the room, and is consequently easily set aside when it is not in use, in an out-of-the-way place."

BOYS & GIRLS' COLUMNS.

The Doctor's Talks.

It will be remembered that last month the relation between the sun, rainfall, and the flow of water in streams and rivers was pointed out. It was also said that there were two general kinds or classes of water wheels to make use of the power in moving water; the *vertical* wheels that turn "over and over," and the *horizontal* ones, that go "round and round." The three principal forms of *vertical* wheels, namely: the over-shot, under-shot, and breast wheels, were described and illustrated, and the *horizontal* ones were left until another time. The working of the horizontal, or Turbine wheels, is frequently explained to classes in Natural Philosophy with an apparatus like that shown in figure 1. This machine consists of a vertical tube, *C*, connecting with two horizontal arms which have their ends bent as shown in the one drawn separate at *A*, *B*. The upper part of the tube is enlarged so as to receive water from a can above it, provided with a faucet. The tube, with its arms, rests upon a pivot in the bottom of the dish, and the whole can move freely. It will be observed that the four ends of the arms are all bent in the same direction, though at first sight it may not seem so. As the water flows through these bent tubes, and out the opening at the ends, the whole apparatus on the pivot is made to revolve, and in a direction opposite to the water jets, as shown by the arrow in the illustration. But what makes the flowing of the water turn the machine? It is because the tubes are bent, and all bent in the same direction; if they were straight, or two bent one way and the other two bent equally in the opposite direction there would be no motion. In a bent tube there is a unequal pressure of the water upon the sides as it flows through, the liquid tending to straighten the tube, but in the case of a thick tube of glass, iron, etc., this cannot be done, and, if possible, the whole tube will move, as in the case of the "mill," shown in figure 1. This unequal pressure of water flowing through a curved tube may be clearly illustrated in the case of a rubber hose; if the water is let in quickly, the curved end of the tube will be thrown wildly about. Firemen have to be on their guard to have the water-hose as straight as possible when they are throwing a heavy stream with great force.

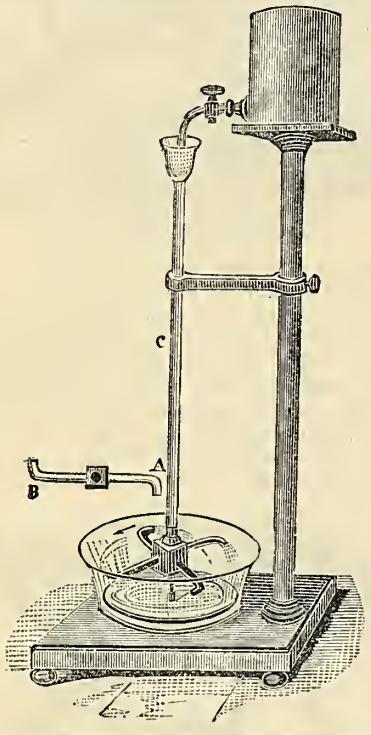


Fig. 1.—APPARATUS KNOWN AS "BARKER'S MILL."

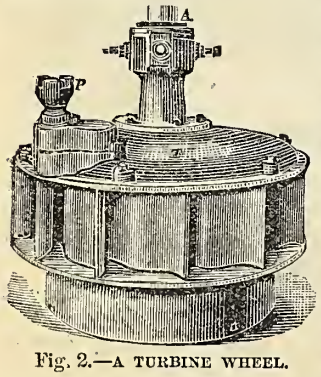


Fig. 2.—A TURBINE WHEEL.

A Turbine water wheel is shown in figure 2, but it is so compact that it will be hard for some to get a clear idea of its structure without another figure showing its arrangement inside, which is done in figure 3, giving a section of the wheel. The wheel is driven by water which comes from above, entering the wheel through the side openings or shutes (*D*, fig. 3), and strikes against the "buckets" marked *B*, the arrows showing the direction of the flowing water. The "dead water" escapes from the central part of the wheel, at the bottom of the flume. The motion of the wheel, which is under water, is given to the machinery of the mill or factory through a shaft marked *A*, in figures 2 and 3. The turbine wheels are not all made to work in exactly the same way as the one here shown, but they are all horizontal, and are the most effective water wheels yet known, that is, they give the most power to the machinery of the mill for the force that is in the water that flows through them.

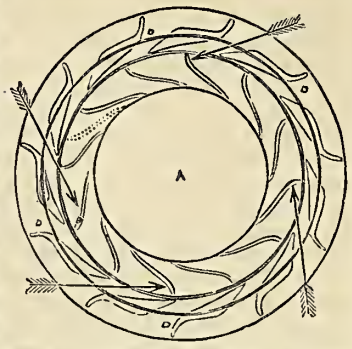


Fig. 3.—SECTION OF TURBINE WHEEL.

Solution: What Is It?

Here comes a hard question from a boy, that does not live a thousand miles from a large and rapidly growing city near the lower end of Lake Michigan. He wants us to tell him what we mean by SOLUTION. It is to be presumed that the young questioner has looked the word up in the dictionary—all should do this before writing to us—and found that it comes from the Latin *solutio*—to loosen. The word *Solution*, as it is now used, has a number of meanings—as the solution of a problem, etc. It is evidently the solution of a substance, as that of sugar or salt, that the young friend has in mind. If we take a glass of pure water, and stir into it a tablespoonful of white sugar, the sugar soon disappears, and to the eye is entirely lost. If we had weighed the water and the sugar before they had been put together, and the (here we have to use our word) Solution made by mixing them, no loss of weight would have been found. The sugar has *dissolved* in the water, and a Solution been formed which is sweet to the taste, and may be called a syrup. But why does the sugar dissolve in the water? There is a force called Cohesion, which you have had explained in a Doctor's Talk not many months ago, that acts between like particles of matter, and tends to hold them together. It was Cohesion that held the particles of sugar together to make the lump of sugar. There is another force called Adhesion, which acts between unlike particles, and tends to hold them together. Now, there is the adhesion between the particles of water and the particles of sugar, and that force is so strong that it overpowers the cohesive force of the particles of sugar for each other, and the particles of water for each other also, and the sugar and the water unite, it all becoming liquid; or, in other words, the sugar melts away in the water. This melting will go on as we add more sugar until a time comes when no more will dissolve, and then we say the solution is a saturated one—the water having received all the sugar it can hold. There are many substances that are not soluble in water, and therefore when they are put in water none of their substance disappears. If wood was soluble in water, a common boat would not last long, when pushed into the lake. The reader will think of iron, quartz, and many other solids that are not soluble in water, and also some liquids that do not dissolve in water, as quicksilver, etc.

Our Puzzle-Box.

CROSS-WORD.

My first is in brilliant but not in gay,
My next is in morning but not in day,
My third is in shutter but not in blind,
My fourth is in conscience but not in mind,
My fifth is in wisdom but not in sense,
My sixth is in paling but not in fence,
My seventh is in carpet but not in rug,
My eighth is in tumbler but not in mug,
My ninth is in barter but not in sell,
My tenth is in fountain but not in well,
My eleventh is in country but not in town,
My twelfth is in feather but not in down:
Dear reader prithee shun my whole,
It damages the very soul.

NUMERICAL ENIGMAS.

1. I am composed of 22 letters:

My 6, 7, 4, 19, 22, is part of a cask.
My 16, 1, 9, 8, 2, 7, is to become invisible.
My 12, 11, 10, 3, 13, 21, is part of a child's clothing in winter.
My 14, 15, 5, 20, 9, is a fabric.
My 18, 17, 16, 13, 19, is a number.
My whole is an excellent proverb.

2. I am composed of 19 letters:

My 14, 8, 7, 17, is an insect.
My 3, 17, 19, 2, 5, 11, is a hard, brittle metal.
My 1, 18, 12, 4, is steam.
My 9, 10, 12, 6, 16, comes from the clouds.
My 9, 13, 15, 7, is any particular place.
My whole is the title of a song.

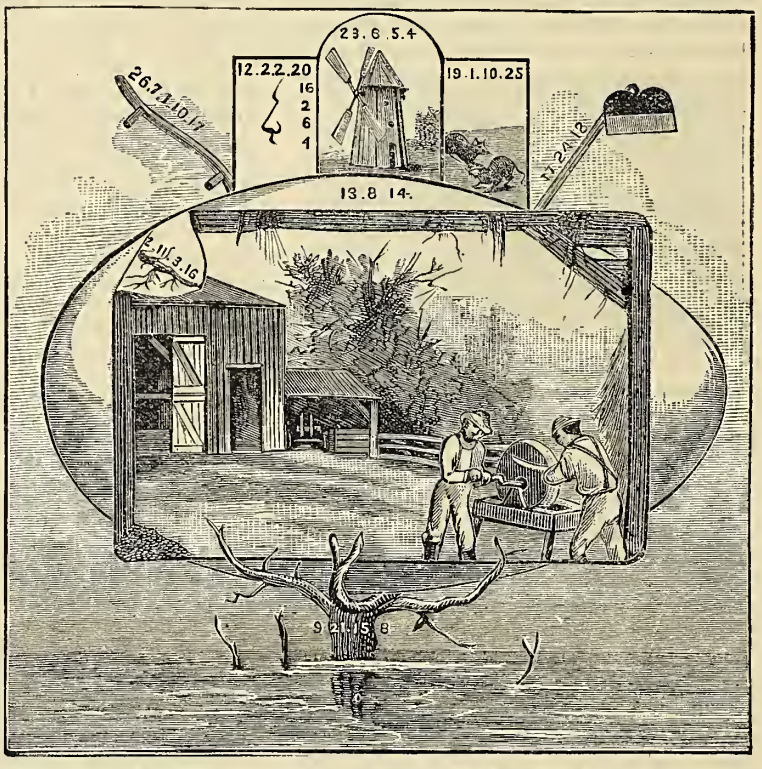
LOGOGRIPH.

Find a word of four letters, from which you may find words to fill the blanks in the following history:

We were sitting —— —— one day; there was plenty to ——, but I —— nothing, for I had a pain in my ——, and a —— in my eye. I could not help laughing, however, when I saw the cat run through the room at a furious —— after a ——.

PROVERB ENIGMA.

This puzzle represents a well known proverb, exemplified in the central picture. The several objects displayed around this may be described by words composed of those letters in the proverb which are designated by the numbers near each object.



DOUBLE ACROSTIC.

Two opposite emotions
Initials and final are,
The first is born in Heaven,
Last never enters there.

1. An instrument of torture.
2. Here music gives delight.
3. A sweet and fragrant flower.
4. Most welcome, day or night.

CHANGED HEADS.

First I am a period of time; change my head several times, and make (1) an unpleasant sensation, (2) beloved, (3) to raise, (4) dry, (5) a fruit, (6) an animal, (7) apparatus, (8) to lacerate, (9) to be told, (10), one of Shakspeare's characters, (11) to waste, and (12) immediate.

PUZZLE

Take a third of twelve,
And a third of one,
And you'll only have two
When the whole is done.

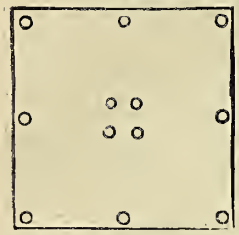
ANAGRAMS.

1. Fool's crime.
2. Brighten any.
3. O! I bit Missie's lip.
4. E'en singer.
5. Tea-urn fount.
6. But a last sin.
7. Ice funnels.
8. Dire ration.
9. For tin pieces.
10. Light may cool.

CONCEALED FISH.

1. Read me that psalm once more, Phebe.
2. Come to supper, Charlotte, the bell has rung.
3. I have just arranged the chairs.
4. Here comes Rudolph, in search of his father.
5. Charles had the measles.
6. The key is under the step; I keep the door locked.
7. Indeed we were not routed; we retired in good order.
8. Hush, Rufus! Hark! Here comes the circus.

A SQUARE AND CIRCLE PUZZLE.



Take a piece of pasteboard, and cut it into the shape shown in the accompanying diagram, and prick in it twelve circles in the positions indicated. The puzzle is to cut the cardboard into four pieces of equal size, each piece to be like all the others, and therefore to contain three of the circles, without cutting into any of them.

DEFINITION PUZZLE.

(In each sentence may be found the necessary letters to spell the word defined. *Example:* Organ of smell—*Nose.*)

1. To support.
2. The Superior of a monastery.
3. To call to witness, to beseech.
4. A solemn or blasphemous affirmation.
5. A pinch, a blast.
6. A notch, a score for keeping an account.

CONCEALED ARTICLES OF CLOTHING.

1. I love illustrious men.
2. What a darling love of a bonnet!
3. That is a beautiful dress.
4. The fabric appears to be Chinese.
5. Did you get it at the Oriental booth?
6. This cocoa tastes delicious.
7. Tommy wants his hoe, Father.
8. I wish those dogs would stop barking.
9. Robert loves those horrid things!

BLANK RHYMES.

(Fill the first blank with a certain word, and let all the words for the rest of the blanks rhyme with it; making sense of the whole twelve lines.)

I went to the city to buy some——,
'Twas winter, I had many a——;
One time I fell upon my——,
And on a stone I cut my——;
I gave my coat a cruel——;
With me I took my puppy "——,"
Who ran along with many a——.
And in my hand I held a——,
In summer, once, I took a——
To Coney Island, to get a——
In ocean-wave; there saw a——;
Of lemonade I took a——.

PI.

Uncotsire car ton howittu herit uncotfeerit myone,
Abeiren era seticosie thouwit thire fretitancoe felsinge.
Awl bntwoit jesticu si sa a nowdu wittohu a cear.

ANSWERS TO PUZZLES IN THE OCTOBER NUMBER.

CONCEALED FABRICS.—1. Gingham. 2. Merino. 3. Cotton. 4. Linen. 5. Silk. 6. Satin. 7. Muslin. 8. Serge. 9. Calico.

NUMERICAL ENIGMA.—Mustard.

CROSS-WORD.—Be cheerful.

DEFINITION PUZZLES.—1. Rowel. 2. Vital. 3. Use. 4. Tussle. 5. Rowen. 6. Virulent. 7. Chapel.

SQUARE WORD.—

L O V E R
O B E S E
V E S T A
E S T O P
R E A P S

CHARADE.—Massacre.

WORD-MAKING.—1. Phial+C, transposed=Caliph. 2. Lyre-beryl. 3. Greed-ledger. 4. Servant-veterans.

DOUBLE ACROSTIC.—Cambodia, elephant.

C- hid -E
A-ctua-L
M-ous-E
B- um -P
O——H
D-acc-A
I- ro -N
A-ttrae-T

PI.—Have courage enough to review your own conduct, to condemn it where you detect faults, to amend it to the best of your ability; to make good resolves for future guidance, and to keep them.

CONUNDRUM.—The letter C, because with it a *lad* might be *clad.*

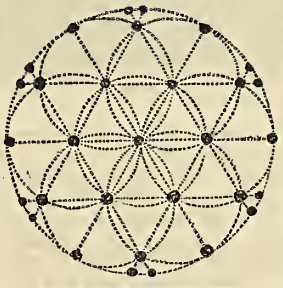
Illustrated Rebus No. 481.—The advice to be found in this Rebus is especially for the young.

The Coming Year.

There are a number of curious things with regard to the figures and their relations in the year 1881. From right to left and from left to right it reads the same. This will not happen again for a long time to come—just how long we will leave for the reader to determine. The first two figures of 1881, divided by 2, gives 9, and the last two figures, divided by 9, gives 9 also. If the figures of the year be divided by 9, the quotient will contain a 9, and if multiplied by 9, the product will contain two 9's. If the first two figures be added together, the product is 9, and if the last two figures be added, the sum is 9 also. If the first two figures be placed under the last two, and added, the sum will be 99, and 18 is 2/9 of 81. By adding, dividing, and multiplying, nineteen 9's are produced, or one 9 for each year required to complete the 19th century. The year that is before us is certainly peculiar in a figurative sense. What else this coming year, that will soon be upon us, may bring can be better told upon the morning of Jan. 1, 1882, when it will give place to its successor.

A Strange Flower Bed.

Last month I showed the method which a strange old man had of setting 27 trees so that they would be in ten rows of six in each row. In the accompanying diagram, there is shown the plan of a flower bed, in which the plants are so arranged that 18 varieties are in one circle; seven circles, with six varieties in each; six straight rows, with six kinds in a row, and three straight rows, with five plants in a row. All these plants: in large circle (18) plus, seven times six (42) plus, six times six (36) plus, three times five (15) gives a total of 111. Only 31 kinds of plants and only one of a kind are used. Small plants will be required in a few of the places in the outer row. The dotted lines show the various circles and straight lines that are produced by this method of planting a flower bed. Any boy could, with a little pains, plant the bed of 31 plants in this shape if he so desired. The circles could be made with a piece of twine and a stake, and the points where the lines cross would be the places in which to set the plants.



PLAN OF FLOWER BED.

U. H.

The Kangaroo.

One of the strangest of animals in Australia—where everything is said to be peculiar in both animal and plant life—is the Kangaroo. There are a number of different kinds of Kangaroos, one of which is a tree climber, and jumps from bough to bough, catching and hanging by its long, strong tail, much as does our opossum, a cousin, or some other near relative of the Kangaroos. The general appearance of the Kangaroo is shown in the accompanying engraving. It will be seen that this animal has a small, mouse-like head, very short and ridiculously small fore legs, and hind parts of great size, ending in a tail of a weight and length entirely out of proportion to the fore part of the body. The Kangaroos range in size all the way from a hare up to the hight and weight of a large sized man. In some respects the Kangaroo resembles a toad, because "when it stands it sits, and when it runs it jumps." It is to be presumed that the first question a boy would ask is: What is the tail so big for? At first sight it might be supposed that this large extremity was for protection—a fighting member—a weapon of defense; but this, we are told, by those who have seen the Kangaroo in its home, is not so. Some have thought it was to aid in walking—a fifth leg—but this animal does not do much walking, and when it does, it does not walk on or with its tail. The tail is mostly used to break the fall as the Kangaroo strikes the ground after it has taken a leap, which is often twenty feet or more. The Kangaroo is a rather savage animal, and an old one will frequently kill the dogs that are used to hunt them—and when cornered have done severe injury to the hunters themselves. The Kangaroo clasps the dog or man by its short fore legs, and then scratches and tears its victim with the long, sharp claws of its hind legs. Sheep-raising is one of the leading industries of Australia, and the Kangaroos are troublesome to the farmers, as they destroy

A PAIR OF KANGAROOS.—(*From a Photograph by Schreiber*).

large quantities of the valuable pasturage. Kangaroos go in flocks, somewhat as our sheep do, and are seldom found entirely alone. It is seldom that the flock is large, usually six to ten, with an old one as the leader. They are valued for both their skin and flesh, and are hunted and killed in large numbers by the natives of Australia. The hunter must be very cunning to be successful in capturing his subtle game. The hunters usually go in bands, and with their plot and plan well understood by all those engaged in the chase, cautiously come upon and surround a number of Kangaroos that may be feeding quietly upon a hillside or valley. The animals, quick to take any alarm, will then hop away at a rapid rate, except those that have fallen victims to the savage hunters.

Perhaps the most interesting thing about Kangaroos is the way which they care for their young. When the baby Kangaroo is born, it is very small, not much more than an inch in length, and entirely unable to run about or care for itself. The young animal is placed in a pouch on the under side of the mother, and in this "cradle" the little Kangaroo passes the early days of its life. When it gets larger and stronger it occasionally leaves its pouch, and hops about, nipping the green and tender herbage, but so soon as any danger is seen it scrambles back to its pocket of safety. Nearly eight months pass before the young Kangaroo leaves the pouch, then weighing about ten pounds, and from that time on seeks its own food and becomes its own protector.

A Puzzle Picture.—The ice is somewhat broken up; and in the back-ground a mountain of this cold solid describes its rough and ragged outline against the foreboding sky. But is this all? Does not the reader find more than a desolate polar scene? Though we may not recognize any of our friends, is there not something

present suggestive of life? The careful observer may be able to at least exclaim, Where and when shall these three meet again. Do you meet with them, reader?

The End of the Year Soon at Hand. Christmas.

There is something sad in the thought that 1880—a year so full of hopes fulfilled and youthful joys realized—is soon to take its place among the eighteen hundred and seventy-nine of its fellows in the silent halls of history and memory. The months of winter, with the skating on the pond, and the coasting on the hillside, went all too quickly away, and the warm days of spring—lengthening, lazy days—came with the singing of happy nest-building birds, almost before we thought the songsters had reached their southern winter homes. With the heated days of May many a boy sought the shade of the leafy trees by the side of the pond or stream, and as he drew, with shouts of triumph, the shining, finny swimmers from the water, he thought, if he did not say: Would that springtime might always last, and fishing and fun be my lot forever! But the days of May soon lengthened into June, and the bright spring flowers gave place to fields of waving grain, and the planted crops were hoed—perhaps somewhat reluctantly—until the monotony of the corn-field was broken by the washing and shearing of the sheep. Then came July—hot July, with its memorable day, "The Fourth"; the day when, of all the year, the "Young America" that is in one, bursts forth with trumpet blast, and the booming of the sunrise gun. This hot month ranks far above the hotter one that followed slowly on her track—the sultry August—because it is the one in which our land was made free. All through the summer the gardens furnished their abundance of fine fruits—fruits that grew close upon the ground—fruits that hung in clusters on curved and briery shrubs—fruits that were knocked from the favorite orchard trees before they are half-way ripe—and fruits that grew, but few know where, save the foraging child who found them. But when the year began to ripen into the mellow autumn, the boys and girls as well, wished that the days would not shorten as they so evidently were doing. There were nuts to gather on the hillsides—the chestnuts, shagbarks, butternuts—all this preparation for winter takes time, and it needs to be done early, or the squirrels and other unfriendly animals will strip the trees. Fall is also the season of the fairs; and with the fruits, the rich tints of the autumnal forests, Thanksgiving Day, the cider casks bursting full of amber sweetness, the golden pumpkins, and the staring and startling lanterns which are made from them, all these, and a thousand other attractions made the dying of the year rather a happy "passing away" after all. The reality of the situation did not come upon the youthful mind until it awoke to the cold and chill of some dreary December morning, when all is dead without, and there is not any too much life within. It is then that the "Melancholy days have come, the saddest in the year." It is then that the white covering that nature has put on suggests the snowy locks of old age, and that a funeral must soon be held, and the aged year laid away in a silent grave, beneath the frozen clods and the still colder snow. But the picture of the end of the year is not so sad as this; it has a brighter and more cheerful ending in many a household: in fact, it is a happy, joyful gathering to see "the Old Year out and the New Year in." I think no one will dispute me when I say that into the last fortnight of the old year and running over into a few days of the new, there is crowded more sport, fun, real solid enjoyment for both young and old, than any other equal period of the year. This is the time of the Holidays, and includes that day of all days—Christmas: the anniversary of that bright dawn in the East when all creation rejoiced and "the morning stars sang together." While this day is "yet afar off," thousands and thousands of people, old and young, are laying their plans and making preparations for Christmas. I can not go into any details of what this one of the family, or that of some other family, is doing for Christmas, only it may be said that many hands are active over work that is hid from the public gaze. "It is more blessed to give than to receive;" but to surprise in the bestowing of gifts is better than all. It has grown to be a sort of second nature for young and old of all classes and conditions of life, to be for weeks before Christmas, so to speak, "half blind" to the movements in the family circle. The mother has her time by herself, the grandma is unusually busy and uncommonly quiet; and as for the children they are full of sly talk and fearful that the "cat will get out of the bag." It is a sort of relief to have Christmas day come after all this suspense. The artist has let us into the "secret chambers" of a single home, and it is the type of many—would it were of all homes in the land. The "old folks" are divided from the children—it may be by a single thin wall, and each group is busy arranging the presents for the other. There is the center-table spread with the toys and the things that make the little ones rejoice; the warm-hearted father, the careful, loving mother, and the deeply interested, good grandma. In the other room there is perhaps more wondering, as for example, how papa will like this! or what will mamma think of that! as the children discuss the merits of the things which their saved money has enabled them to gather together. Christmas is a more novel thing to them than to the older members of the family, and therefore has a freshness which gives vent to smothered laughter and subdued fun. I like to see this spirit of giving early developed; it unfolds the better nature of the children, and makes them have a generous feeling and regard for others. If Christmas had no loftier meaning, and led to no higher and nobler thoughts and actions, than that of pure and simple giving—giving for the good feeling that it brings to the one who receives, and the double blessing to the one that bestows—it has not become a holy Holiday in vain. I should like to be present when this family, now separated, shall be united, and there is no doubt but what the reunion will be a pleasant—a joyous one, and the old and young together will have a happy day. The three generations will have a common bond of sympathy, and all hearts will beat to the sweet music of love—a music that it is hoped will never cease to roll. May the good Father bless them all, and may the day be a merry, merry Christmas. That this may be the portion of every one of my young readers, is the wish of your UNCLE HAL.

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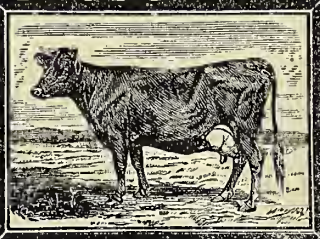

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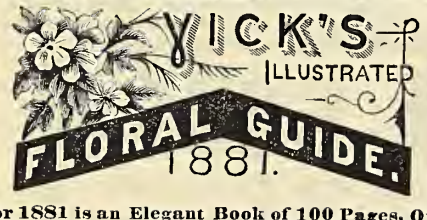

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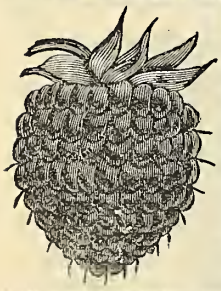

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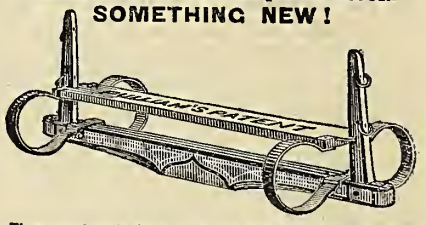

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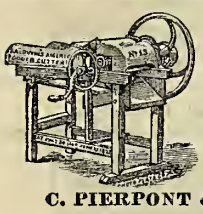

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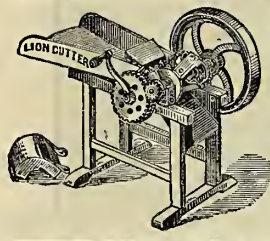

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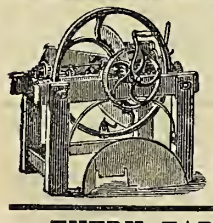

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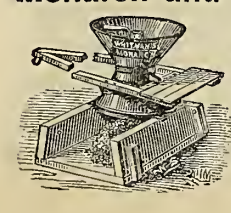

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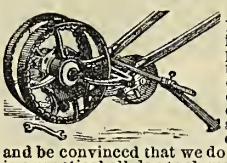

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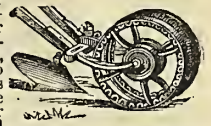

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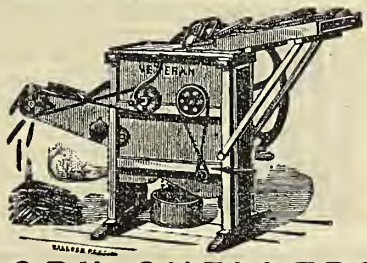

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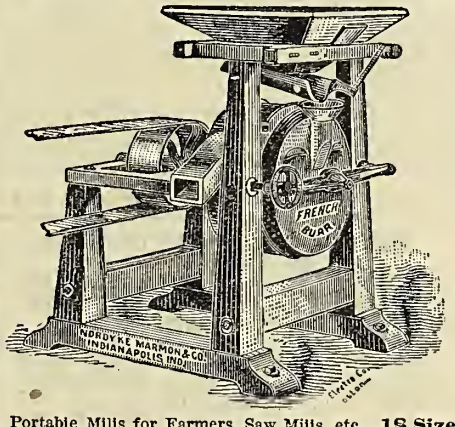

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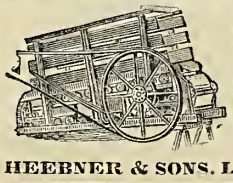

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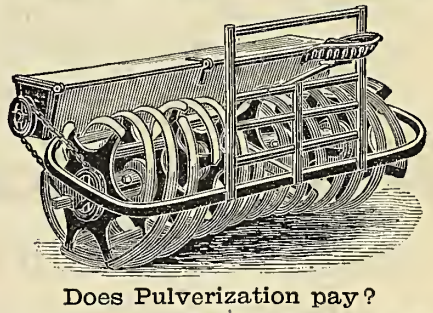

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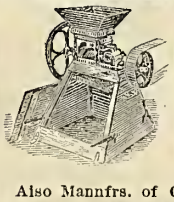

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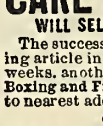

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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from Page 499.

In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations are seldom repeated, as those who desire information on a particular subject can cheaply obtain one or more of the back numbers containing what is wanted.

Back numbers of the "American Agriculturist," containing articles referred to in the "Basket" or elsewhere, can always be supplied and sent post-paid for 15 cts. each, or $1.50 per volume.

The German Edition.—All the principal articles and engravings that appear in the *American Agriculturist* are reproduced in the German Edition. Besides these, there is a special department, edited by an eminent German cultivator. Our friends can do us a good service by calling the attention of their German neighbors and friends to the fact that they can have the paper in their own language, and those who employ Germans will find this Journal a most useful and acceptable present.

Bound Copies of volume 39, and of every previous volume back to Vol. XVI. (1857), neatly bound, with gilt backs, Index, etc., are supplied at $2 each (or $2.30 if to be sent by mail). See Publishers' Notes, 2d cover page.

Clubs can at any time be increased by remitting for each addition, the price paid by the original members; or a small club may be made a larger one at reduced rates, thus: One having sent 6 subscribers and $7, may afterwards send 4 names more and $3, making 10 subscribers for $10.00; and so for the various other club rates.

Terms to New South Wales, New Zealand, Australia, Africa, etc.—To several inquirers. Under the latest revision of the Postal Union Regulations the price of the *American Agriculturist* (either English or German edition), including postage *prepaid* through, will be covered by 7 shillings sterling per annum. This applies to the above countries, and to all others embraced in the General Postal Union. The simplest mode of remittance is by Postal Money Orders, payable in London, to the order of Orange Judd Company. These can be readily cashed in N. Y. City at a slight discount, which the publishers will cheerfully pay. For Club rates, (postage included), see our second cover page, and reckon 22 cents to the shilling sterling.

The Care of Grindstones.—The exposure of the stone to the sun has a tendency to harden it. And if one part be left in the water habitually it will grow soft, and will wear away faster than the other. If the trough is put upon movable supports in the frame, it can be adjusted to the stone without much loss of time.

Mule Breeding.—"D. G." The value of mules depends very much upon their size. Large mares are most profitable as a rule, and the larger the jack the better. Of course mere size should not govern in selecting breeding animals of either sex. Large well-formed jacks sell at a high figure, and are usually imported from France, Spain, or Malta. "Riley on the Mule" is the best hand-book we know on the subject; it treats of buying and handling mules, and briefly of breeding.

Alders and Hardhacks.—"A Subscriber," Long Hill, Conn., asks for some chemical that will, by a simple application, kill shrubs which infest pastures. To kill most kinds of brush, cut close to the ground in spring, and as soon as the young shoots start overstock with sheep. Or after the grass is gnawed down pretty short by cows and horses, turn in so many sheep that they will need to eat the brush to live. There is no "chemical" that will kill the troublesome plants, and spare the grass. Salt may be used, but not to kill the plants directly; it is to be applied fine, and sprinkled on the leaves when wet with rain. Cattle soon find it, and eat the shoots down close.

Orchard Grass.—"A. C. D.," Frederick Co., Md. You can sow Orchard Grass by itself or with grain (not buckwheat), on sandy or loamy soil. It may be sowed late in autumn, but on stiff soils it would be likely to winter kill. You would do well to plow this winter if you can, and sow without a "foster crop" as early in the spring as you can. Sow 6 or 8 lbs. of Clover with it.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our record kept daily during the year, show at a glance the transactions *for the month ending Nov. 10th*, 1880, and for the corresponding period last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 d's *this* m'th	521,000	7,836,000	6,119,000	415,000	987,000	1,481,000
27 d's *last* m'th	507,000	6,997,000	6,304,000	212,000	473,000	1,533,000

SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 d. *t's* m'h	597,000	26,563,000*	12,609,000*	354,000	1,106,000	3,621,000*
27 d. *l't* m'th	539,000	31,016,000*	14,948,000*	259,000	285,000	3,109,000*

* Including forward delivery.

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 days 1880..	521,000	7,836,000	6,119,000	415,000	987,000	1,481,000
26 days 1879..	484,500	10,170,000	4,116,000	557,000	1,193,000	1,212,000

SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 days 1880..	597,000	26,563,000	12,609,000	354,000	1,106,000	3,621,000
26 days 1879..	473,000	26,839,000	6,347,000	395,000	673,000	1,796,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
Nov. 8, '80..	3,775,143	2,919,519	21,826	46,024	928,079	117,111
Oct. 7, '80..	2,228,321	3,272,024	55,431	19,324	449,202	134,850
Aug. 10, '80..	3,046,607	1,784,441	46,004	25,283	78,910	202,553
Oct. 8, '79..	2,137,893	1,672,136	27,312	31,211	578,056	207,729
Nov. 10, '79..	7,455,616	2,610,961	283,505	333,654	720,711	180,840

4. *Exports from New York, Jan. 1 to Nov. 8.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
'80.	3,209,000	56,736,000	45,141,000	1,859,000	259,000	421,000	381,000
'79.	3,028,516	55,735,601	29,248,000	3,637,488	147,867	511,000	303,128
'78.	2,144,798	47,458,833	24,019,000	3,730,574	1,518,417	3,538,000	358,122

CURRENT WHOLESALE PRICES.

	Oct. 9.	Nov. 10.
FLOUR—Super State & Wes'n	$3 50 @ 4 10	$3 65 @ 4 35
" Extra State	4 10 @ 4 50	4 50 @ 4 90
" Extra Southern	5 60 @ 6 50	5 25 @ 7 00
" Extra Genesee	4 40 @ 5 90	4 90 @ 6 25
" Extra Western	4 00 @ 8 50	4 60 @ 8 50
" " Minnesota	4 00 @ 8 75	4 60 @ 8 59
RYE FLOUR, Superfine	4 50 @ 5 00	5 60 @ 6 10
CORN-MEAL	2 50 @ 3 30	2 65 @ 3 60
CORN-FLOUR, ℔ bbl	3 00 @ 4 00	3 25 @ 4 00
OAT-MEAL, ℔ bbl	4 75 @ 6 50	4 50 @ 6 25
BUCKWHEAT FLOUR, ℔ 100 lbs	2 25 @ 2 50	2 00 @ 2 35
WHEAT—All kinds of White	1 00 @ 1 17	1 10 @ 1 20
" Red and Amber	1 00 @ 1 17	1 05 @ 1 25
" Spring	1 00 @ 1 16½	95 @ 1 20
CORN—Yellow	52¾@ 67	59½@ 70
" White	54 @ 55	59½@ 62½
" Mixed	52½@ 53¾	58 @ 60¾
OATS	38 @ 45	37 @ 47½
RYE	97 @ 99	1 01 @ 1 04
BARLEY	70 @ 95	73 @ 1 10
HAY—Bale, ℔ 100 lbs	70 @ 1 10	85 @ 1 20
STRAW, ℔ 100 lbs	55 @ 90	70 @ 1 05
COTTON—Middlings, ℔ lb	11⅛@ 11½	11 @ 11¼
HOPS—Crop of 1880, ℔ lb	20 @ 28	16 @ 23
" old, ℔ lb	4 @ 25	4 @ 23
FEATHERS—Live Geese, ℔ lb	47½@ 50	45 @ 50
SEED—Clover, W. & St. ℔ lb	8¼@ 8¾	8 @ 8¾
" Timothy, ℔ bushel	2 35 @ 2 50	2 60 @ 2 80
" Flax, ℔ bushel	1 35 @ 1 40	1 35 @ 1 45
TOBACCO, Kentucky, &c., ℔ lb	4 @ 15	4 @ 15
" Seed Leaf, ℔ lb	5½@ 50	5½@ 50
WOOL—Domestic Fleece, ℔ lb	18 @ 48	18 @ 50
" Domestic, pulled	18 @ 45	20 @ 52
" California	15 @ 35	14 @ 33
TALLOW, ℔ lb	6⅜@ 6½	6⅜@ 6½
OIL-CAKE—℔ ton	30 00 @ —	32 00 @ —
PORK—Mess, ℔ bbl	16 00 @ —	15 00 @ —
" Extra Prime, ℔ bbl	12 00 @12 50	12 00 @13 00
BEEF—Extra Mess	10 00 @10 50	9 75 @10 25
LARD, in tres. & bbls, ℔ 100 lb	8 45 @ 9 10	8 55 @ 8 90
BUTTER—State, ℔ lb	21 @ 32	23 @ 32
" Western, poor to f'cy, lb	16 @ 32	14 @ 31
CHEESE	8½@ 13¼	8½@ 13
EGGS—Fresh, ℔ dozen	20 @ 23½	22 @ 26
POULTRY—Fowls, ℔ lb	10 @ 15	8 @ 12½
" Chickens, ℔ ℔	10 @ 16	7 @ 15
" Roosters, ℔ ½	4 @ 8	4 @ 8
" Turkeys, ℔ lb	8 @ 11	10 @ 13
" Geese, ℔ pair	1 00 @ 1 62½	1 00 @ 1 62½
" " ℔ lb	— @ —	7 @ 13
" Ducks, ℔ pair	40 @ 75	40 @ 75
" " ℔ lb	11 @ 16	10 @ 15
" Wild, ℔ pair	15 @ 60	15 @ 1 50
PIGEONS, ℔ dozen	1 25 @ 2 50	75 @ 2 25
SNIPE, ℔ dozen	35 @ 1 50	35 @ 1 50
WOODCOCK, ℔ pair	50 @ 75	40 @ 60
PLOVER, ℔ dozen	— @ 2 00	1 00 @ 1 25
REED BIRDS, ℔ dozen	75 @ 1 25	— @ —
GROUSE, ℔ pair	50 @ 75	70 @ 1 00
QUAIL, per dozen	— @ —	1 75 @ 2 50
PARTRIDGES, ℔ pair	50 @ 1 00	20 @ 1 00
VENISON, ℔ lb	10 @ 17	8 @ 13
HARES, per pair	— @ —	40 @ 50
RABBITS, per pair	— @ —	25 @ 30
APPLES, ℔ barrel	50 @ 1 50	50 @ 2 00
PEARS, ℔ barrel	2 00 @ 6 00	3 00 @ 8 00
QUINCES, ℔ bbl	2 50 @ 4 50	1 50 @ 3 00
GRAPES, ℔ case	1 50 @ 2 75	1 75 @ 2 75
" ℔ lb	2½@ 8	3 @ 5½
POTATOES, ℔ bbl	1 12½@ 1 75	1 12½@ 1 87½
" Sweet, ℔ bbl	1 25 @ 2 75	1 00 @ 2 50
TOMATOES, ℔ box	20 @ 30	40 @ 60
TURNIPS, ℔ bbl	50 @ 1 00	40 @ 62½
BEANS, ℔ bushel	1 30 @ 1 75	1 40 @ 1 80
EGG PLANTS, ℔ bbl	1 25 @ 2 00	3 00 @ 4 00
PEAS—Canada, in bond, ℔ bu	— @ —	82 @ 83
" new, green, ℔ bag	1 50 @ 2 50	1 80 @ 2 00
CORN, green, ℔ 100	50 @ 75	75 @ 1 00
STRING BEANS, ℔ bag	50 @ 75	— @ —
CARROTS, ℔ bbl	1 25 @ 1 75	1 00 @ 1 25
LIMA BEANS, shelled, ℔ bush	— @ —	4 50 @ 5 00
BEETS, ℔ 100 bunches	1 00 @ 1 50	65 @ 75
CABBAGES, new, ℔ 100	1 75 @ 6 00	1 00 @ 5 00
ONIONS, ℔ bbl	2 50 @ 4 00	3 00 @ 5 00
CRANBERRIES, ℔ bbl	— @ —	4 50 @ 6 00
SQUASH, ℔ bbl	50 @ 75	40 @ 75
OKRA, ℔ 100	— @ —	25 @ 50
PUMPKINS, ℔ 100	2 00 @ 4 00	3 00 @ 6 00
CAULIFLOWER, ℔ bbl	— @ —	1 00 @ 2 50
CELERY, ℔ dozen	75 @ 1 00	75 @ 1 25

Extensive dealings have been reported during the month in Stocks and Bonds, prices of which have advanced materially, despite the scarcity of Money.. More or less serious interruption to business operations resulted from the political excitement previous to election. ....A fair movement has been reported in most kinds of general merchandise at, however, irregular prices, closing with more steadiness....The leading kinds of domestic produce have been remarkably brisk, mainly in the home trade connection, though in good part for export. Food supplies here and in Europe have shown a decidedly upward tendency. Speculation has shown remarkable vigor, having acquired practical control of the home markets, thus, in large measure, determining the course of values. Grain has been worked up rapidly in price, on extraordinary transactions, especially in No. 2 Red and No. 1 White Wheat, No. 2 Corn, the principal grades of Oats, prime Rye, and the favorite qualities of Barley. Export purchases have been checked, in part, by the rise in values, which has been most pronounced within the last week or two....Flour has been on the advance, in sympathy with Wheat, and has met with a much readier sale....Provisions have been also quite active, especially Western Steam Lard, which leaves off buoyantly, with a lively call noted for stock, particularly in the option line....Mess Pork, which ruled much higher early in the month under review, under speculative manipulations, broke sharply about the beginning of November, and closes about steady at the reduced figures. More demand has been noted for Beef and Beef Hams, at stronger rates. Butter and Cheese have been sought after to a moderate extent, and Eggs have been in better request....A good demand has been noted for Wool, which has been quoted dearer and firm at the improvement....Tobacco has been quoted steady, on a fair degree of activity....Naval Stores and Petroleum close weaker and less sought after....Hops fell in price early in the month, under free offerings, leading to more liberal operations for home use and shipment....A dull market has been reported for Seeds, with values about as previously quoted....Hay and Straw have been quoted higher, is in comparatively limited supply, and wanted. ....Transactions in Cotton have been on a moderate scale, and generally at easier rates, as influenced by the weakness in the foreign markets and the depression reported from the Southern ports of outlet....Ocean freights have been fairly active for Breadstuffs, and Provisions, and Cotton, but at variable figures, closing firmly, including Grain by steam to Liverpool, 15c. per bushel; London by steam, at 16c.; Glasgow, by steam, at 14c.; to Bristol, by steam, at 17c. per bushel; to Antwerp, by steam, at 14c. per bushel, and sail to Cork, for orders for vessels of average carrying capacity—say 3,000 to 4,000 qrs.—$1.32 @ $1.35 per qr. of 480 lbs....Apples, by steam to British ports, at 84c. @ $1.08, mostly at 96c. on continued heavy shipments....The visible supplies of Wheat—embracing the hoards at lake ports, in transit, and on the seaboard—at latest dates, embraced about 19,118,100 bushels; of Corn, 19,365,000 bushels; of Rye, 897,700 bushels; of Barley, 2,612,000 bushels, and of Oats, 5,054,000 bushels, against about Sept. 1, an aggregate of 14,716,000 bushels Wheat, 19,012,000 bushels Corn, 574,000 bushels Rye, 265,000 bushels Barley, and 1,626,000 bushels Oats.

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Oct. 11	11,500	129	4,679	35,843	35,284
Oct. 18	15,932	151	3,783	42,988	36,657
Oct. 25	12,845	122	3,986	38,524	46,050
Nov. 1	13,066	231	3,684	38,355	41,483
Nov. 8	12,647	211	3,035	35,812	37,646
Total for 5 *Weeks*	65,990	844	19,167	191,522	200,120
do. for prev. 4 *Weeks*	57,223	444	19,614	168,740	110,523

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per week	13,198	169	3,833	38,304	40,124
do. do. *last Month*	14,306	111	4,903	42,185	27,631
do. do. *prev's Month*	12,820	57	4,979	34,443	26,910

Prices for beeves per lb. estimated dressed weight:

WEEK ENDING	*Range.*	*Larger Sales.*	*Aver.*
Oct. 11	6½@11¾c.	8½@10 c.	9 c.
Oct. 18	6⅝@11¾c.	8½@ 9¾c.	8¾c.
Oct. 25	6½@11¼c.	8¼@ 9½c.	9 c.
Nov. 1	6½@11¾c.	8 @ 9½c.	8¾c.
Nov. 8	6½@11½c.	8 @ 9½c.	8¾c.

Beeves.—A dull market has prevailed for most of the month. As this report closes, the weather is warm and the markets are filled with meat, some of which is spoiling on the butcher's hands. Texans sold for 6¼c.; Colorados, 7¼c.; poor to fair natives ranged from 7@8¼c.; extras at 11@11¼c. A fancy steer of 2,700 lbs. sold at 11¼c., to dress 59 lbs....**Milch Cows.**—There are more cows coming forward, and the demand is better supplied than for some time. Prices continue steady at $30@$55 per head for common to prime cows..... **Calves.**—Grassers were doing a little better under the lighter supplies, selling at 1¾@2¼c. per lb. live weight; Fed calves at 2⅝@3c., and common to prime veals at 4@7¼c. ....**Sheep and Lambs.**—The market closed with prices strong for good stock. Lambs were also in good demand, and prices firm. Sheep sold from $3.62½ for poor Kentucky to $5.60 for choice Pennsylvania wethers. Lambs ranged from 5¼@6c. for common to prime..... **Swine.**—Arrivals very liberal, and the tone of the market dull. Ohio hogs are being held for 5c.

The Horse Market.—Receipts from all points are moderate. There is some demand for large draft horses, which sell for $250 to $350. Well-matched driving teams are wanted at $800 to $1,000. Several lots of stallions have been imported recently. Messrs. Powell Bros. received ten powerful Clydsdale stallions, ranging in weight from 1,800 to 2,000 lbs. These fine horses go to Crawford Co., Penn. W. H. Jordan, of Waverly, Iowa, received some fine prize Cleveland bays. We saw both of these lots of imported horses at Stoddart's stables.

Prices of Fertilizers.

Nitrate of Potash (95 per cent), per lb.	8 @8½c.
Sulphate of Potash (potash 44 per cent), per lb.	3½@4 c.
do. do. (potash 27½ per cent, per lb.	1½@1¾c.
German Potash Salts (potash 12 to 15 p. c.), p. ton.	$14.00@16.00
Muriate of Potash (potash 50 per cent), per lb.	2 @2¼c.
Nitrate of Soda, per lb.	4 @4¼c.
Sulphate of Ammonia (25 per cent), per lb.	4½@4¾c.
Dried Blood (ammonia 13 per cent), per ton	$45.00@50.00
No. 1 Peruv. Guano, Lobos, ℔ ton	46.00
do. do. guaranteed, ℔ ton, cargo M.	56.00
Soluble Pacific Guano, per ton	45.00
Excelsior Fertilizer Works, Fine Ground Raw Bone	55.00
Mapes' Complete Manure (clay soils), per 1,000 lbs.	25.50
do. do. do. (light soils), per 1,000 lbs.	25.50
do. do. do. "A" Brand (wheat), ℔ 1,000 lbs.	20.00
do. Tobacco do. do.	52.00
do. Fruit and Vine Manure, per ton	37.00
do. Pure Raw Bone, per ton	38.00
Homestead Superphosphate, per ton	40.00
do. Tobacco Grower, per ton	60.00
Banner Raw Bone Flour, per ton	45.00
Stockbridge Rye Manure, per ton	45.00
do. Wheat Manure, per ton	45.00
do. Seeding Down Manure, per ton	40.00
Bowker's Wheat Phosphate, per ton	40.00
Walton, Whann & Co.'s Raw Bone Phosphate, per ton.	40.00
Gypsum, Nova Scotia, ground, per ton	8.00

Lightning.—"G. B. S.," Boonville, Mo. It is no certain indication of mineral deposits to have the lightning strike and tear up the ground; in fact it is no *indication* at all. Metallic veins are good conductors of terrestrial electricity, so are veins of moisture in the ground. For this reason the lightning may be more likely to strike near moist ground, or near metallic veins, than elsewhere.

Sore Shoulder.—"J. S.," Warrenton, Va., has a horse which had a very sore shoulder, and he is now afraid to use a collar for fear the sore will break out again. Try a Dutch or breast collar; that will probably not bear on the same spot. If that, too, irritates the sore, give the animal a rest until it is well.

Whitman and Burrell's Silo.—The names of Whitman and Burrell are familiar to all our readers as extensive advertisers of dairy implements and appliances. Not only do they make and sell dairy utensils, but they use them on their dairy farm, near Little Falls, which they have recently equipped, mainly for experimental purposes. An important feature of this dairy establishment is a silo sufficiently large to test the preservation of corn-fodder as a part of dairy management. The silo, completed last summer, is 56 feet long, 16 feet wide, and 22 feet deep, built in the most thorough manner, and divided by a brick partition, crosswise, into two compartments. The corn from eight acres was cut and stored away in the early part of September, covered with tongued and grooved boards, over which planks are laid cross-wise and weighted with about 50 tons of stone on each silo. The cost of the fodder as stored was 80 cents the ton. Feeding will commence in December, and we hope the friend who forwarded the above facts, will report the opening of the silos and the condition of the fodder, and as to its feeding results.

Currants.—"J. M. D.," wishes to know if currants can be raised on a hill-side with a slope to the east; where the plants can be had, and what fertilizer can be used in the absence of wood ashes.—Any good soil that will bear sixty bushels of corn to the acre will be suitable for this crop. The slope, if not so steep as to wash badly, is not objectionable. We should prefer a clay loam well drained to gravel, but this fruit is not so particular about a soil as some others. Farm-yard manure will answer a good purpose. Almost any nursery or dealer in small fruits will furnish either cuttings or the plants at reasonable rates.

Danger in the "Silos."—We are impressed with the importance of warning people who have put their corn-fodder in tanks, especially in deep ones, of the dangerous carbonic acid gas—the "choke damp" of mines and wells. A farmer near Sing Sing, used an old ice-house for pitting his corn-fodder; on Saturday night, when they knocked off work, there were some seven or eight feet of fodder cut in half-inch bits, and well trodden down in the pit. On Monday morning it had settled considerably and one of the hands jumped in and was treading about on it to see if it had settled evenly, when he felt dizzy and faint; the thought of "choke damp" flashed through his mind, and he called out to have a ladder lowered to him. This was done just in time, and he half crawled and was half hauled out. His head was four or six feet above the worst of the "damp," for it is very heavy. Had he fallen he would have been drowned in the gas, as effectively as in water, without a struggle or a murmur. When going into a pit never fail to lower a lantern first, for half a minute, and if it burns brightly the air of the pit is fit to breathe.

The Poultry Shows.—The Exhibitions given in this list are devoted wholly, or in great measure to poultry. These shows come after the other fairs are past, and when farm work is not so pressing, are widely distributed through the U. S., and should be well attended by all who take an interest in fine well-bred poultry:

Rensselaer Co. Poultry Ass'n	East Albany, N. Y.	Dec. 8-13
Tolono Pet Stock Ass'n	Tolono, Ill.	Dec. 14-16
Terre Haute Pet Stock Ass'n	Terre Haute, Ind.	Dec. 14-21
New Jersey State Society	Newark, N. J.	Dec. 14-21
Pottstown Pigeon Club	Pottstown, Pa.	Dec. 15-17
Dist. of Columbia Ass'n	Washington, D. C.	Dec. 15-22
Eastern N. Y. Fanciers' Ass'n	Troy, N. Y.	Dec. 22-28
White River Valley Ass'n	Anderson, Ind.	Dec. 23-25
Poultry & Pet Stock Ass'n	Germantown, Pa.	Jan. 3- 6
Logansport Poultry Ass'n	Logansport, Ind.	Dec. 28-J. 1
Wide Awake Poultry Club	St. Johnsbury, Vt.	Dec. 28-30
Windham Co.	Brattleboro, Vt	Jan. 4- 7
Southern Mass. Ass'n	New Bedford	Jan. 4- 7
Saginaw Valley Ass'n	East Saginaw, Mich.	Jan. 11-14
Champlain Valley Ass'n	Burlington, Vt.	Jan. 11-14
Central Mass. Ass'n	Worcester, Mass.	Jan. 11-14
Springville Ass'n	Springville, N. Y.	Jan. 12-14
Cleveland Poul'y & Pet Stock	Cleveland, O.	Jan. 12-19
Western Penn. Society	Pittsburg, Pa.	Jan. 13-19
Western Poultry Club	St. Louis, Mo.	Jan 12-19
Lancaster Poultry Ass'n	Lancaster, Pa	Jan. 14-19
Mascoma Poultry Ass'n	Mascoma, N. H.	Jan. 18-20
Vermont State Poultry Ass'n	Rutland, Vt.	Jan. 18-21
Union Pet Stock Ass'n	New Berlin, N. Y.	Jan. 18-21
Northern Indiana Poul'y Ass'n	Fort Wayne, Ind.	Jan. 18-22

Grasses for Names.—The number of specimens of grasses that are sent to us for determination, especially from the South and West, indicates a general desire to know more about our native grasses, and that attention is directed toward the improvement of the pastures. "M. M. M.," Manitoba. The grass is not a native, but is the Perennial Rye-grass, *Lolium perenne*, of Europe. It is regarded as a valuable pasture grass, but not so good for hay, as Timothy...The common "Crab-grass," *Panicum sanguinale*, has been several times sent as Bermuda Grass, and now the "Mexican Drop-seed," *Muhlenbergia Mexicana*, comes from "H. M. D., Martinsville Va., who asks if it is not Bermuda Grass. Although the Drop-seed has long underground running stems, the portion above ground is erect, while the Bermuda creeps along the surface. Besides, the flowers of the Bermuda are arranged upon short stems which are attached at the end of the upright stalk, and spread like the fingers of a hand, as shown on page 105, in May last ...D. Strang, Lincoln Co., Tenn., sends "Tall Red-top." *Tricuspis sesleriöides*, a tall, coarse species, about which little is known as to its value. In the same parcel was the "Proliferous Panic-grass," *Panicum proliferum*, which also came from "M. H. C.," Clarksville, in the same State. This in moist soils grows 4 to 6 feet high, with broad leaves, large succulent stems, and bears copious panicles of seed. All that the writers upon grasses have recorded in relation to this species is that: "Cattle are very fond of it." It seems to be deserving more attention than it has yet received, and we hope that our Tennessee friends may make the trials they propose and report results.

Wild Hops in Manitoba.—A lady in Manitoba, "M. M. M.," wishing to have hops, gathered the seeds from a wild vine, and obtained one plant which bore remarkably large clusters, some of which she sends, and asks several questions. Seedling hops are not always like the parent; half-a-dozen or more varieties are in cultivation, differing in color of vine, size, and shape of cluster, productiveness, etc. In cultivation, the old stools are divided, or sets, which are shoots with a piece of root attached, are planted. Our correspondent says that only two of her seedlings bore, evidently not being aware that the plant has separated flowers—the staminate and pistillate being in different plants. In practice, about half a dozen staminate plants are set to the acre. Large hops are not of necessity the best, as their value depends upon the quantity of small resinous grains, called *Lupulin*, they contain; these are found at the base of the scales of the cluster near the seeds; and when the hop is rubbed between the fingers they adhere to them. The abundance of these, the character of the odor, and the care used in curing, as shown by the color of the hops, are all considered in judging of their quality and value.

American Apples Abroad.—The almost entire failure of the apple crop in Great Britain, and the great abundance in our own orchards, have led to the shipment of this fruit to an extent never before known. Formerly a few barrels of very choice apples were sent over, and these brought handsome profit to the shipper. This year the consignments have been so large, that some thousands of barrels were offered in London in a single day. There is some danger that the reputation of "American Apples" (for they are seldom sold under any other name than "American"), may suffer from the sending of fruit of indifferent quality. There is perhaps no apple that bears transportation better, or is a better keeper than the Campfield. It is a good-sized, showy red apple, but it is sweet. In England, sweet apples are unknown, and not appreciated; the selling of a lot of Campfields, a few years ago, as Baldwins, did much to bring that excellent fruit into disfavor. If in the wholesale shipments now going on, varieties are sent that show that "American" does always stand for a firm-fleshed, rich and high-flavored apple, it will have an unfavorable effect upon the trade in future years.

Practical Azalea Culture, by Robert J. Halliday, Florist, Baltimore Md. Sometime ago we noticed "Camellia Culture," and we now have a companion treatise on the Azalea, by the same author. Works upon a specialty are restricted in their usefulness to those who cultivate the plant upon which they treat, but to such they are of great value, especially when, as in the present case they are by one thoroughly competent to teach.

Stone Fences—Two Suggestions.—C. G. Tousey, of Dutchess Co., N. Y., sends to the *American Agriculturist* the accompanying sketch, and writes that he has tried the following plan with entire success, on both wet and dry soil: "After the wall is laid, three plow furrows are turned against each side; the first one foot away, and not to be disturbed. It stakes and rider are to be used, these are now driven. The earth of the other two furrows is used to make a stop bank, two feet high, against the wall, on each side, as in figure 1. This will keep both wall and stakes in place. If locust stakes are used, the fence will not need overhauling in a lifetime."—We suppose Mr. T. sows grass seed to form a sod upon the bank—*an important matter*, for all stone walls may be strengthened in the above method. Dry soil

Fig. 1.—END OF WALL.

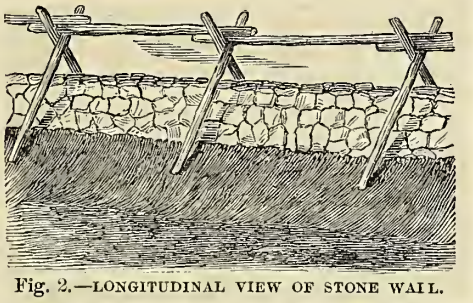

Fig. 2.—LONGITUDINAL VIEW OF STONE WALL.

expands very little in freezing, while a water-saturated soil, like water itself, swells and shrinks about one-eighth of its bulk in freezing and thawing, and this is what heaves fence posts, and throws down or disturbs stone fences or walls. A drain under a wall or on the side of it, that will keep the soil *dry*, will prevent disturbance by frost. The ditches above described are wasteful of land, though they secure immunity from frosts, and also save their depth in the hight of wall required. Figure 2 shows a longitudinal view of the wall.

Fisher's Grain Tables.—This is a little work which will tell at a glance the value of any number of bushels or of pounds of any kind of grain at a given price—in fact a "ready-reckoner," as applied to grain. Besides the grain tables there are others useful for farmers, and dealers in farm produce. Price by mail, 40 cts.

Sending us Papers.—It often happens that a letter comes to the Editors in which our attention is called to an article that appeared in a local or other paper, and informing us that the paper has been sent. Unless the paper is sent to one of the editors by name, or the article is conspicuously marked, there is little probability of our seeing it. The clerks who open the mail have many hundreds of papers to handle each day, and unless there is something to arrest their attention, such papers are likely to be passed over as regular exchanges. The better way is to cut out the article, mark the name of the paper and date upon it, and inclose it in the letter.

Lice on Canary Birds.—"H. W." An old German breeder of Canaries, whose management we used to watch with interest, when he suspected that a bird was troubled with parasites, would cover the cage over night with a piece of cotton flannel, the soft side down. In the morning the insects would be found gathered upon the flannel, which was scalded and ready to use again.

Orchard Grass Seed.—"O. J. M.," Jay Co., Ind., wishing to sow many acres to Orchard Grass, proposes to raise his own seed, and asks how to do it. It being important to avoid the seeds of weeds, a field that has been in some well cultivated crop should be selected, prepared as if for a crop of grain, and the grass seed sown in early spring. For hay, very thick seeding is required, but a bushel and a half of good seed will be sufficient for this purpose. The grass should not be cut until an examination of the heads shows that some of the seeds have begun to ripen. The grass may be cut and treated in the same manner as ordinary hay, but it is much better to cradle it, and bind it in sheaves like grain. When cured, it is thrashed with a flail and the seed cleaned.

Lip Salve.—"S. M. T." This as sold in the shops is an ointment of white wax, spermaceti and oil of almonds, colored red by Alkanet root, and perfumed with the oil of rose. It has no special curative qualities; mechanically it protects cracked lips from the air, and thus relieves pain. Pure mutton tallow, if not so pleasant, as to its odor, will be equally effective.

Grass Seeds.—There is no seed in respect to the quality of which so little care is given as grass seed. It is not unusual for farmers to gather up the sweepings of the hay lofts and sow them. Such rubbish, of course, contains some grass seeds, but it is largely mixed with the seeds of weeds. It will pay every farmer who sows much grass seed to keep a portion of a meadow exclusively for seed bearing, and to carefully remove all weeds. To most persons grass is grass, without considering that grasses vary. Some years ago an English seedsman, finding some unusually large stools of Orchard-grass in a field, saved the seed and sowed them; he continued to breed, so to speak, from this stock, and now gets a fourth more for this seed than the common kind sells for.

Stereopticons and Magic Lanterns.—With the Magic Lantern a magnified picture is thrown upon a white wall or screen, where it can be seen by a large number. Stereopticon is a recent name for an improved Magic Lantern, and is a most excellent means of illustrating lectures or for exhibiting views of scenery, buildings, etc., merely as an entertainment. Having occasion to use a Stereopticon some months ago, we procured one of J. H. McAllister's, which was most satisfactory in its operation. The improved Magic Lantern for family amusement is offered in our Premium List, and the Stereopticon is described among the advertisements.

Bee Notes for December.

BY L. C. ROOT.

COMMENCING BEE-KEEPING.

Those interested in our pursuit should spend some portion of their leisure during the winter months in acquiring information in regard to the most approved methods in the apiary. It is desirable that those who wish to commence bee-keeping should become familiar, not only with the necessary, but the best fixtures, in order to begin intelligently, and to continue in the right direction. [The author modestly refrains from saying so, but the Editors have no hesitation in stating, that the best work in the language is Quinby's "New Bee-Keeping," revised and largely re-written by Mr. Root. This gives the most recent methods and appliances in bee-culture, and is a most complete guide to all the operations of the apiary. Post-paid from this office for $1.50.—EDS.]

CAUSES OF FAILURE.

Many beginners do not attach sufficient importance to this matter of preparation by reading, and often find it necessary to make many changes, thereby incurring much needless expense. Others become discouraged and drop the business in a year or two, when, if circumstances had been more favorable, they would have attained, with application, reasonable success. It is a mistake for beginners to hope to reach at once, results equal to those who have had years of experience. Those who indulge in this idea, will be sure to meet with disappointment. It is a common mistake with modern writers upon bee-keeping to offer too glowing inducements to the inexperienced.

In my opinion there are, at the present day, two distinct classes, taking extreme ground in relation to our interests, both of which I conceive to be in error. One class endeavors to induce all, without regard to fitness, to engage in bee-keeping, assuring them, by delusive statements, that it is the highway to prosperity. The other, on the other hand, says that the business should only be conducted by specialists, who devote themselves exclusively to it. I am often told that I am helping to instruct the public to produce such quantities of honey, that those of us, who make it a special business, cannot dispose of our own honey at figures that will make it remunerative. I admit that there may be some truth in this, if we are to be controlled by selfish aims alone, but I cannot believe that this is the proper view to take of it.

The facts are these. All over this beautiful land, blossoms are secreting honey which is passing away and being wasted, at the very doors of those who might, with a proper understanding of the means, secure it as a wholesome article of food. Again there are those in nearly every community, who are keeping a few swarms

of bees in box hives, and in the old way securing little or no profit. This is the class I desire more particularly to influence. One of the earliest lessons I received was, that whatever it paid to do at all, it paid to do well. If it pays at all to keep bees in the manner alluded to, it certainly must pay much better to keep them after an improved method.

It is not true that all can keep bees successfully, but only such should undertake it as are by nature adapted to it, and will give it the same thorough continued application that is required to make any branch of business profitable. If one desires to understand how to commence rightly, and to become familiar with what is required to conduct bee-keeping satisfactorily, secure some practical work on the subject which does not represent either class of extremists just mentioned; begin moderately, and grow into the business as experience increases.

QUESTIONS AND ANSWERS.

UNITING BEES.—"I could get bees from those who brimstone them, by merely paying for extra trouble, but cannot ascertain whether it would be advisable to unite such bees with one's own, or how it should be done."—I would advise securing all such bees rather than see them destroyed. There is an advantage in having stocks very populous during winter. They may be safely united by smoking all thoroughly.

SIZE OF OPENING.—"Will you please state in the *American Agriculturist* the proper sized opening to a hive, to be used in connection with a swarm catcher, one that will allow free ingress and egress to the worker bees, and at the same time prevent the possible escape of a laying queen?"—An entrance $^5/_{32}$ of an inch will accomplish this, but it is seldom or never desirable, to use so small an entrance. The workers are too much hindered by it. Swarms may be prevented from leaving in the owner's absence, by clipping off one wing of the queen, and removing all queen cells once in eight days. It is far better to control the desire to swarm, which may usually be done by making moderate artificial increase.

COMB FOUNDATION.—"What kind of comb foundation shall we use in boxes?"—I find that the lightest grades of foundation now made, are not best for boxes. Medium weight is preferable.

Seeding to Grass with Buckwheat.—"S. A. S.," New Haven Co., Conn., writes: "In the November No. of the *American Agriculturist*, under 'Grass Seed Sowing,' it is stated that grass will not probably do well with buckwheat if this makes a good stand. I have tried it, and with good success; the land was old, run out meadow, that is, cold, heavy, wettish land, than could not be plowed until the last of May and first of June. The last of June I harrowed it thoroughly, and sowed very evenly one-half bushel of buckwheat to the acre, and four hundred pounds of ground bone to the acre, and harrowed, or rather double harrowed both in. With this was sowed one-fourth bushel of timothy seed to the acre, bushed in, and finished it by rolling. I can not imagine how, on that wet land I could have had a better stand of grass than I did, unless with turnips, as suggested, which method I think stands ahead of all others I ever tried. Heretofore I have sown the same lot to buckwheat, using one and one-fourth bushel of seed to the acre, and harvesting from 60 to 80 bushels from the lot. The reason I sowed the buckwheat so thin was simply to shade the grass from the burning July and August sun. I had no expectation of a crop of buckwheat to harvest. If I ever sow another lot of buckwheat, I shall not sow over one-half bushel to the acre. I would as soon seed to grass on land plowed only once from turf with buckwheat, as anything for June sowing. The land should be plowed one month before sowing, and thoroughly worked down with the harrow before seeding it. After the buckwheat comes off, top-dress the land with some fine manure or fertilizers."

Will Hungarian Grass Founder a Horse?—"O. A.," Califon, N. J. We have stated it very often, but it does not seem to be remembered, that Hungarian grass, if cut early, may be fed like other hay. If allowed to stand until the bristles around the seeds get hard, it will then be unsafe to feed it to horses. The value and the safety both depend upon the condition of the grass at the time of of cutting.

Annatto.—"G. T. T." asks how to spell the name, and what the article is that is used for coloring cheese and butter. The spelling above given is that usually followed in this country, though we sometimes see it with a single n or t. In England it is usually written Arnotto or Arnatto. The article itself is the pulp which surrounds the seeds of a South American shrub (*Bixa Orellana*). The seeds are thrown into water, and when fermentation takes place their thin covering of pulp separates; when the water is evaporated, the Annatto is obtained as a stiff reddish brownish red paste, which is packed in baskets for exportation. It is of a dark red color, and is used sometimes in domestic dyeing of cotton cloth. In South America the roots of the shrub are used in broth, and the paste itself is mixed with chocolate to both color and flavor it. Its chief use is to color butter and cheese, and it has for this use one merit—it is perfectly harmless. Though the quantity used by a single dairy is comparatively small, the aggregate consumed is very large. One of our advertisers, L. E. Ransom, is the largest importer of Annatto in New York, and there are several other importing houses.

Pearls in Common Oysters.—It is well known that the real pearl is caused by some foreign substance, such as a grain of sand, which has found its way within the shell of the pearl oyster. The animal being unable to get rid of this, covers it with the material with which the shell is lined. The interior of the Pearl Oyster and the fresh water Mussel (*Unio*), is bright and "pearly," and the pearls found in them have a similar appearance. The lining of the common oyster is dead white, like white chinaware. That often produces pearls, but they are always like the interior of the shell. A correspondent in Maryland sent, not long ago, several small pearls from the common oyster, with the request that we would sell them for him. Such pearls have no value whatever, as they are entirely without lustre. All that can be done with these oyster pearls is to keep them as curiosities.

Personal Questions.—"C. C. S.," Philadelphia, asks us to tell him in the December number where he "can get a situation on a farm." It is necessary to say from time to time that we do not answer such questions in the "Basket." Unless an answer to a question will be of interest to a number besides the one who asks, it is not given here. All purely personal questions, if it is possible to reply at all, are answered by mail.

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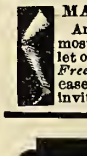
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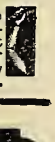

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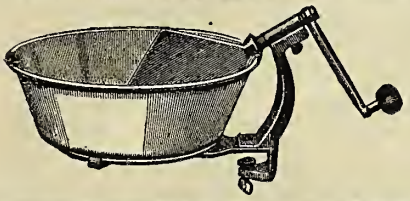

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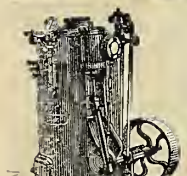

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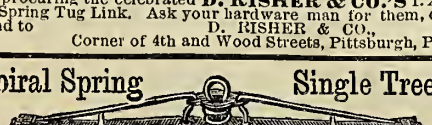
Patented Feb. 3d, 1880.

Affords the greatest protection to **HORSES,** Harness, Wagons, Plows, Mowers and Reapers. Reliable and guaranteed as represented. Protect your Horse, save your money, by procuring the celebrated **D. RISHER & CO.'S** I. X. L. Spring Tug Link. Ask your hardware man for them, or send to

D. RISHER & CO.,
Corner of 4th and Wood Streets, Pittsburgh, Pa.

Spiral Spring Single Trees



Price, $3.50 per pair. Where we have no agents, we will send a sample pair on receipt of $2. Send for circular. Local Agents wanted **F. R. Willson & Sons,** Columbus, Ohio.

ASK FOR

Wells, Richardson & Co's
PERFECTED BUTTER COLOR

It Gives Butter the gilt-edged color the year round. The largest Butter Buyers recommend its use. Thousands of Dairymen say **IT IS PERFECT.** Used by all the best Creameries. Awarded the International Diploma at N. Y. Dairy Fair. Ask your druggist or merchant for it; or write to ask what it is, what it costs, who uses it, where to get it. **WELLS, RICHARDSON & CO., Proprietors, Burlington, Vt.**

USE ONLY THIS THE FIRST AND THE BEST

WELL BORING,

ARTESIAN WELL DRILLING & MINERAL PROSPECTING MACHINERY, and how to use, is fully illustrated, explained and highly recommended by the **"American Agriculturist"** in the November Number 1879: Page 465. Send for it. Portable, low priced, worked by man, horse or steam power. Needed by farmers in every county. Good business for Winter or Summer, and very profitable. Can get good wells in earth or rock anywhere. We want the names of men that need wells. Send for illustrated price-list and terms to Agents. Address,

Pierce Well Excavator Co., 29 Rose Street, New York, U. S. A.

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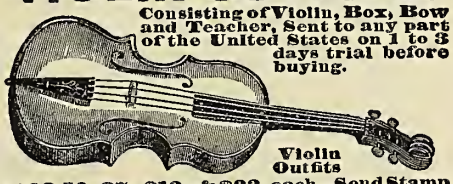
Consisting of Violin, Box, Bow and Teacher, Sent to any part of the United States on 1 to 3 days trial before buying.



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Send for our LATEST ILLUSTRATED CATALOGUE (32 pp. 4to.), with NEWEST STYLES, at $51 and upward; or $6.38 *per quarter*, and up. *Sent free.* MASON & HAMLIN ORGAN CO., 154 Tremont St., BOSTON; 46 E. 14th St., NEW YORK; 149 Wabash Av., CHICAGO.

JOSEPH GILLOTT'S STEEL PENS

SOLD BY ALL DEALERS THROUGHOUT THE WORLD.
GOLD MEDAL PARIS EXPOSITION-1878.

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THE MAGICAL ORGANETTE, ONLY $8.
Double size Reeds, extra strength and finish.
Magical Organette Circular free.
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EMPLOYMENT—LOCAL OR Traveling State which preferred. Also SALARY per month. All EXPENSES advanced. WAGES promptly paid. SLOAN & Co. 306 George St. Cincinnati. O.

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AGENTS WANTED EVERYWHERE to sell the best **Family Knitting Machine** ever invented. Will knit a pair of stockings, with **HEEL** and **TOE complete,** in 20 minutes. It will also knit a great variety of fancy-work for which there is always a ready market. Send for circular and terms to the **Twombly Knitting Machine Co.,** 409 Washington St., Boston, Mass.

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Lowest prices ever known on **Breech-Loaders, Rifles,** and **Revolvers,**

OUR $15 SHOT-GUN

at greatly reduced price. Send stamp for our New Illustrated Catalogue (C)

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$14 SHOT GUN!

The Best Double-Barreled Shot-Gun in the world for the money. Warranted genuine twist, with ***flask, Belt Box Wads, Box Caps and Wad Punch.*** Also our celebrated Kentucky Rifle for ***$12, warranted or no sale.*** Send for Illustrated Catalogue and Price Lists to

James Bown & Son, Enterprise Gun Works, ***136 & 138 Wood St., Pittsburgh, Pa.***

ESTABLISHED, 1848.

REID'S Creamery.

The simplest, best, and most convenient yet invented.

AGENTS WANTED.

Send for circular to

A. H. REID,
1631, 33 & 35 Barker St., Philadelphia, Pa.

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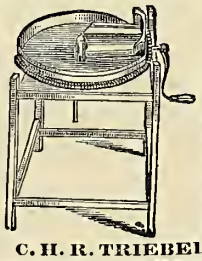
THE GLOBE WASHBOARD AND THE IMPROVED UNION CHURN

Are the best in the world. Neither have any equals. Over 600,000 **Globe Washboards** sold in 1879. No more sore hands or torn clothes on inferior washboards. Buy it and try it. The Improved Union Churn is the perfect butter-maker. Easier and quicker than by any others. One trial will convince any one of the fact.

Send for circulars with full details. Liberal terms to dealers.

UNION MANF'G CO., Toledo, Ohio.

BUTTER WORKER.



Lilly's Patent.

Won **First Premium** at the American Institute Fair, New York, in 1878; at the Fair of the Penn. State Agricultural Society in 1879; at the Dairyman's Fair at Delhi, N. Y., in 1879, and at County Fairs innumerable. Acknowledged to be the **only self-feeding and reliable machine in the market.** Descriptive circular sent free.

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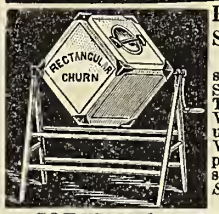

Rectangular and Square **BOX CHURNS**

Cheapest and Best. No inside fixtures, and *always reliable.* Six sizes of each kind made. Three sizes of the *Lever* Butter Worker made. Best material used, and every Churn and Butter Worker *warranted* exactly as represented. One Churn at wholesale where we have no agent. *Send Postal for Circulars.*

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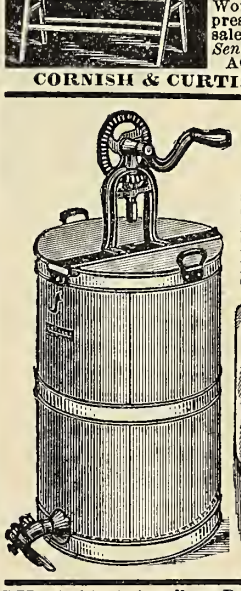
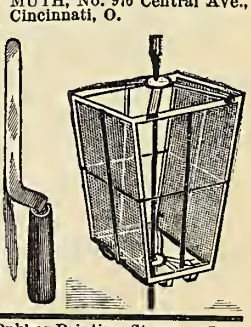
MUTH'S All Metal Honey EXTRACTOR.



Has only to be used to be appreciated. Every Bee-Keeper should send for my circular giving details regarding the care of bees, and how to get the most Honey. CHAS. F. MUTH, No. 976 Central Ave., Cincinnati, O.



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PURE DORKING CHICKENS FOR SALE. Address **LE GRAND LUCAS, Spring Station, Woodford Co., Ky.**

USE THE VERY BEST.
"Trade R Mark."
ANNATTO.
L. E. RANSOM, 34 Maiden Lane, N. Y. City.

BUCHAN'S CARBOLIC

Medicinal Soap.

The Healing, Purifying, and Disinfecting properties of Carbolic Acid are among the most wonderful facts disclosed by modern science. The best, safest, and most convenient method of nsing this wonderful Curative is in the form of Soaps.

This Soap is highly prized by physicians and nurses for the sick-room. It purifies and disinfects all unpleasant and dangerous odors, prevents the spread of contagion, and is invaluable in curing sores, eruptions, and all cutaneous diseases.

Buchan's Carbolic Medicinal Soap is for sale at all Druggists.

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FOR THE SHEEP FARMER'S SCOURGE, Worms in the throat, and internal Parasites in Sheep and Lambs, **THE NEW SHEEP DIP, LITTLE'S CHEMICAL FLUID,** is a cure. Send 3-cent stamp for testimonials, price, etc., to T. W. LAWFORD, Gen'l and Wholesale Ag't., No. 296 E. Chase St., Baltimore, Md.

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The regular course of lectures commences in October, each year. Circular and information can be had on application to

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Address H. H. STODDARD, HARTFORD, CT.

GAME FOWL BRED & SHIPPED. Also Sporting Dogs and Cattle, by J. C. COOPER, Cooper Hill, Limerick, Ireland.

$10.00 BRONZE and NARRAGANSETT TURKEYS. Bred ten years for size and plumage. $10.00 a pair. 20 per cent off until Dec. 1st. For pick of flock order now. W. CLIFT, Mystic Bridge, Ct.

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BEACON HILL, Northport, Long Island, N. Y.

Importer and **Breeder** of **Ayrshire, Guernsey,** and Jersey **Cattle,** which always take the Highest Awards at *County, State, National,* and *International* **Shows.** Southdown Sheep direct from Lord Walsinghan's flock, in England. Berkshires of the *highest type.* Collie Dogs of my own selection on the Highlands of Scotland. An inspection of the stock invited. Only 2 hours from N. Y. City.

NOVELTY INCUBATOR.

I offer this as the **simplest, cheapest,** and **best** Incubator in the market. Costing less than 3 cts. per day for oil. Hatches 80 to 90 per cent almost surely. **Holds 100 Eggs. Price, $30.00,** ready for shipment.

Also **NOVELTY HYDRO-MOTHER. Price, $8.50,** ready for shipment. Circulars giving full particulars on application.

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A book devoted entirely to PLYMOUTH ROCK fowls, also a separate book on WHITE LEGHORNS, another on BROWN LEGHORNS, a book on curing POULTRY DISEASES, and another entitled HOW TO FEED FOWLS. Either of the above mailed for 25 cts., or all five for $1.00. Address the author

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10 Thoroughbred Heifers and Cows, 3 to 8 years old.
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All the above are registered or entitled to registry in the A. J. C. Club Register.

25 Cross-breed Heifers and Cows 2 to 7 years old. These are a mixture of the two breeds, Jerseys and Ayrshires, the best Family or Butter Cows I have ever bred. All are rich milkers and butter-makers. Some of them 2-lb. Cows. No printed circulars issued. My prices range from $45 for a high grade Heifer Calf, to $500 for the best thoroughbred Cow. Purchasers are invited to examine the Stock in person, in preference to my own selection.

THOMAS FITCH, New London, Conn.

85,000,000 RINGS SOLD.

Map of U. S. Showing No. and price of Live Stock mailed free; also Catalogue of Ringers, Rings, Stock Markers, Barbs for Board Fences, Hinskers, Ladles, Ditch Cleaners.

H. W. HILL & CO.,
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Imperial Egg Food.

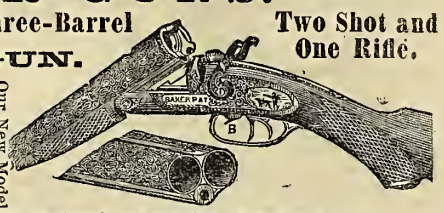
Will make Hens lay. Permanently benefits **laying Hens, Moulting Fowls, and Young Stock.** It makes the Poultry Yard the **best paying part of the farm.** Packages sent prepaid for 50c. and $1.00. 6 lb. boxes, $2.00; 25 lb. kegs, $6.25, delivered to R. R. Station or Express Co.'s.

CHAS. R. ALLEN & CO., Hartford, Conn.

Wholesale Agents: B. K. Bliss & Sons aad J. C. Long, Jr., & Co., New York.—Benson, Maule & Co., Philadelphia.—H. B. Arnold & Co., Boston.—Baker & Hamilton, San Francisco, Cal. —Greensfelder Bros., St. Louis, Mo.

THE BAKER GUNS.

Three-Barrel GUN. Two Shot and One Rifle.



We make the best double gun in the world for the money —choke-bore, rebounding locks, extension rib. Our $40 gun has the best English twist barrels, and the best material throughout. All guns sent on trial and guaranteed.

Price—Best English Twist Barrels, $40. Damascus steel, $55 to $200. Send stamp for Descriptive Circular.

A new feature in the Gun line. It is light, compact; from 8 to 10 lbs. in weight. The Rifle is perfectly accurate. It has proved a great success for all kinds of shooting. All guns shipped on trial and guaranteed. Price $75 to $250.

L. C. SMITH, Sole Maker of Baker Guns, Syracuse, N. Y.

MARCHAL & SMITH ORGAN CO.

NO AGENTS!

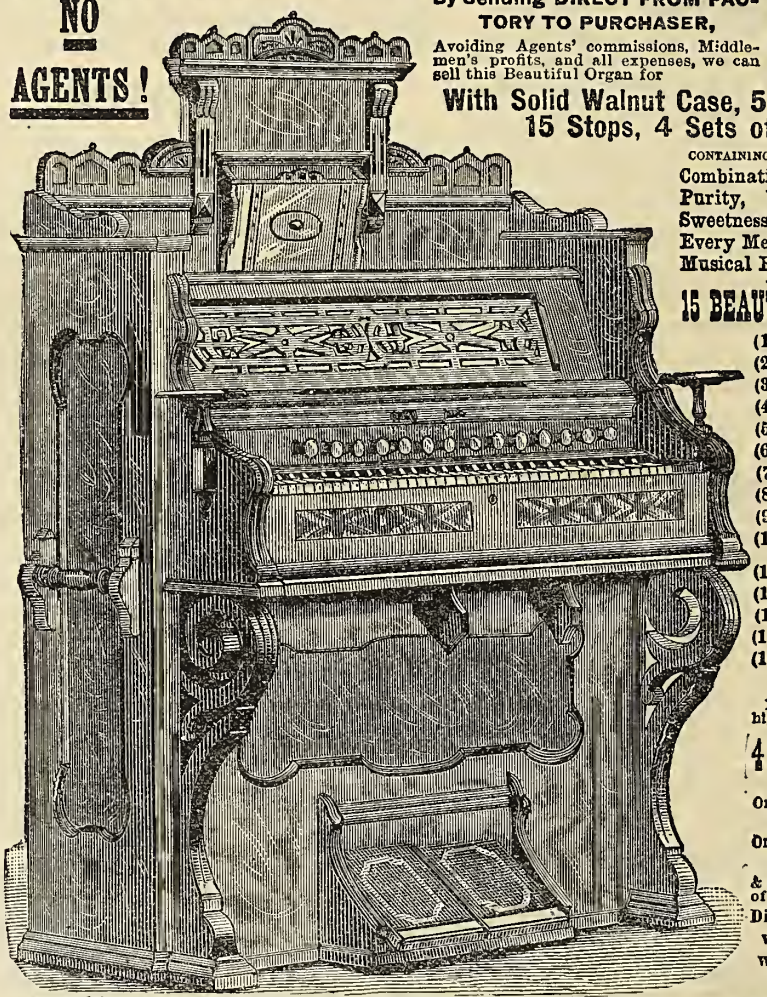
By Sending DIRECT FROM FACTORY TO PURCHASER,

Avoiding Agents' commissions, Middlemen's profits, and all expenses, we can sell this Beautiful Organ for **$60**

With Solid Walnut Case, 5 Octaves, 15 Stops, 4 Sets of Reeds,

CONTAINING THE GRANDEST

Combination of Power, Purity, Variety and Sweetness of Tone, with Every Mechanical and Musical Excellence.



15 BEAUTIFUL STOPS

(1) Diapason.
(2) Dulcet.
(3) Dulciana.
(4) Echo.
(5) Celeste.
(6) Clarionet.
(7) Sub-Bass.
(8) Coupler.
(9) Vox Humana
(10) Diapason Forte.
(11) Aeoline.
(12) Celestina.
(13) Flute.
(14) Flute Forte.
(15) Grand Organ Knee Stop.

No. 875, 70 Inches high, 48 inches long

4 Sets of Reeds, as follows:

One set of powerful **Sub-Bass**
One set, 3 octaves, **Vox Celeste,** & 2½ octaves each of regular **Diapason Reeds, with Coupler, which doubles the power.**

We are determined that every one shall have an opportunity to test this magnificent Organ. We therefore put the price at **$60,** and **send on Fifteen Days Trial.** We send with every Organ a STOOL, MUSIC and INSTRUCTION BOOK.

Making a Complete Musical Outfit for $60.

PLEASE SEND IN YOUR ORDER AT ONCE. Remit by Post Office Money Orders, Express Prepaid, or by Draft on New York. Money Refunded and freight charges paid both ways if any way unsatisfactory, or you may pay only after you have fully tested it at your own home for fifteen days. Send reference or evidence of your responsibility if you do not send cash with order. The reason we offer this Organ so low is to have it introduced everywhere. Hence this unparalleled offer. Order at Once. Every Organ we manufacture, when introduced in a new locality, sells many more.

THE ONLY HOUSE IN AMERICA

That offers a Five Octave Organ, Four Sets of Reeds, having

SUB-BASS, COUPLER, CELESTE & GRAND ORGAN FOR $60

With Stool, Music and Instruction Book complete. Sent for trial and examination. Guaranteed Six Years. You take no responsibility till you receive and approve the Organ.

TWENTY YEARS WITHOUT ONE DISSATISFIED PURCHASER.

A MOMENT'S CONSIDERATION will show the certainty of securing a superior instrument from us. Dealers can trust to their own shrewdness and the ignorance of purchasers to conceal defects in the instruments they sell. We can not know who will test ours, and must send instruments of a quality so superior that their merits can not be hidden. Order direct from this advertisement. You take no responsibility. Nothing gained by correspondence.

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MARYLAND FARMS $7 to $25 per acre. Short winters, breezy summers, healthy climate. Catalogues free. H. P. CHAMBERS, Federalsburg, Md.

FIVE HUNDRED VIRGINIA FARMS AND MILLS for Sale or Exchange. *Write for free Catalogue.* R. B. CHAFFIN & CO., Richmond, Va.

"POLLED ANGUS

Or Aberdeen Cattle." Frank B. Redfield, of Batavia, New York, is breeding and **importing** these famous cattle. I now have a fine lot of young animals waiting to be sent out from Scotland before spring. Send for Catalogue.

FOR SALE—Large White Pekin Ducks. They do not go away from home. Also **White Barb Pigeons.** A. S. BEEKMAN, South Branch, N. J.

RIVERSIDE FARM.—Jerseys, Berkshires, and Cotswolds imported, bred, and for sale. Bronze Turkeys, Pekin Ducks, and Light Brahmas. Send for catalogue. **C. P. MATTOCKS, Portland, Me.**

CUMBERLAND VALLEY POULTRY YARDS, Chambersburg, Pa. **80 Bronze Turkeys, P. Rock, Brahma and Cochin Cockerels.** Cheap. Write.

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SUMMIT

Stove-Pipe Shelf and Utensil Stand, the most convenient article ever offered to housekeepers. Agents meet with greater success than ever. One agent made **$192** in **15** days, another **$38** in **2** days, another **$27** in **1** day. **No Freight Charges.** Address office nearest you.

SUMMIT MANUFACTURING CO.,
Philadelphia, Pa.; Cincinnati, O.; St. Louis, Mo.

BEST WASHER AND WRINGER *in the World.* Guaranteed to do perfect work or money refunded. Warranted for 5 years. Price of Washer, $8. Sample to agents, $3.50. Price of Wringer, $7.50. Sample $4.25. Circulars free.
ERIE WASHER CO., ERIE, PA.

THE OPPENHEIM

DOUBLE BUGGY.

Instantly changed from a neat Buggy into a roomy 4 passenger Carriage. Entirely new principle. No rattling or shaking. No half-and-half look about it. Send for illustrated price list. New Haven, Conn.
THE OPPENHEIM M'F'G CO.

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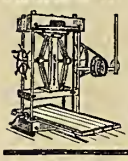
To sell our **Nickel Plated Home Lamp,** an improvement on the Student Lamp. Why? Because it is the safest and best in the world; can be attached to the Sewing Machine, Piano, Desk, etc., and turned in any direction to suit the eyes; **can not be upset;** has a convenient match box and filling indicator. The religious papers indorse all our claims. Our agents making as high as **$25** per day proves it **a bonanza.** Its low price, liberal terms, and rapid sales surprise old agents.
Address, **HOME LAMP CO., Cincinnati, O.**



CIDER

Presses, Graters, Elevators, &c.
BOOMER & BOSCHERT PRESS CO., Syracuse, N. Y.

TO KEEP IT SWEET **CIDER** or prevent *Secondary* FERMENTATION,
USE
IMPROVED PRESERVING POWDER
It does not impair the taste or flavor, is thoroughly reliable and *absolutely harmless to the human system.*
SEND 35 cts. for a sample, forwarded free; sufficient for 40 gallons. One pound, sufficient for 8 Bbls., $1.50, receiver to pay charges, or $1.80 by mail, prepaid. Price lower in larger quantities.
W. ZINSSER & CO., 197 William St., New York.

$20! **STRANGE BUT TRUE!** that we sell this **N. Y. Singer Sewing Machine** for **$20.** Warranted *new, last,* and *best made. Don't pay agents three profits,* but buy direct, and **save $20!** *Our free book explains all.* Don't buy till you read it. Hundreds of testimonials. Machines sent anywhere on trial. **No risk.** You need not pay till suited. GEORGE PAYNE & CO., 47 Third Avenue, Chicago, Ill.

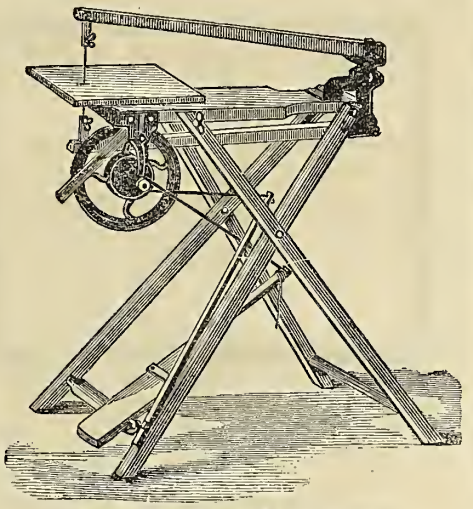
20 Skeins Berlin Zephyr (20 shades) or 40 knots 1 or 2 colors 25c. 180 knots, 1 to 9 colors, $1. Best Germantown, any color, 30c. a skein, 4 skeins $1, post-paid. Pattern Book, 25c., 5 for $1. F. GARDINER, Lynn, Mass.

THIS NEW
ELASTIC TRUSS
Has a Pad differing from all others, in cup-shape, with Self-Adjusting Ball in center, adapts itself to all positions of the body, while the **BALL** in the cup **PRESSES BACK** the **INTESTINES JUST AS A PERSON WOULD WITH THE FINGER.** With light pressure the Hernia is held securely day and night, and a radical cure certain. It is easy, durable and cheap. Sent by mail. Circulars free.
Eggleston Truss Co., Chicago, Ill.

THE DEAF HEAR

THROUGH THE TEETH.
PERFECTLY, all Ordinary Conversation, Lectures, Concerts, etc., by a wonderful **New Scientific Invention, THE DENTAPHONE.** For remarkable public tests on the **Deaf**—also on the **Deaf and Dumb**—see *New York Herald,* Sept. 28th; *New York Christian Advocate,* Nov. 20., etc. **Small Size**—can be carried in the pocket. The Deaf should send for FREE Illustrated descriptive Pamphlet to American Dentaphone Co., 163 W. 4th St., Cincinnati, O.

L. E. RANSOM, 34 MAIDEN LANE, N. Y. CITY. **Perfect Butter Color** at lowest prices.



New Folding Fret Saw.

Every home, however humble or magnificent, is more beautiful if adorned with brackets and other work produced by home hands. Hundreds of thousands of such homes now exist, where only the slow and tedious hand frame fret saws have been available. More recently the foot-pedal and multiplying wheels have come into use, and the increasing demand has tended to cheapness and improvement. We are now happy to announce another *large advance in Perfection, Cheapness, and Portability, by which are secured stronger, better working machines; a material reduction in price, and a great saving in cost of carriage or delivery, as well as in storage room when not in use, with sundry other improvements and advantages.—All the above are secured in this new saw.* By a simple arrangement the table is lowered to a convenient working hight for a boy of 5 or 6, or raised high enough for the tallest man, and at every hight it stands *firmly,* and when not in use, it can be folded up and put away. It has a *tilting* table, and will execute fine scroll-work or inlaid work. Though as strong and durable as any one could desire, the weight is ONLY 15 LBS. The Editors and Publishers of the *American Agriculturist* were so pleased with this new machine that they at once secured the control of it for the benefit of their readers. Price, $2.25. Receiver to pay expressage.

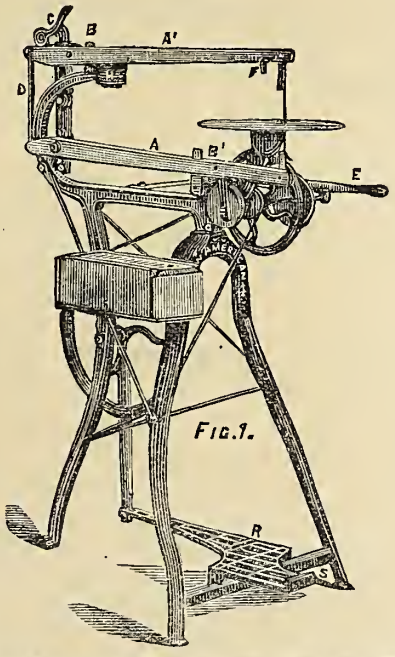
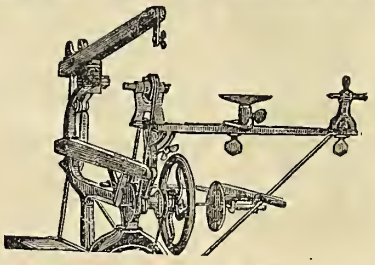


FIG. 1.

Combination Fret Saw, Lathe, Etc.

Beach's New Improved American Combination Fret Saw, Handsome in Design, and claimed to be the Lightest Running and Best Made Tool in the World for the Price; and unequaled for Cheapness, Simplicity, Speed, and Efficiency. Several engravings and much space would be required to explain all its parts, and its working, ingenious improvements, etc. Full descriptive circulars sent when desired. Is built almost wholly of iron and steel; stands firmly without fastening down. Will cut Horn, Ivory, Pearl, Shell, Brass, and all kinds of Wood up to 1¼ inch thick. Saw runs straight up and down. Has a tilting table to cut at angles. Has Air-pump which drives all sawdust from the work. Has 20 inches swing, for largest Brackets. Has **Drill Attachment** always ready for use. Also **Turning Lathe** for work **12** inches long, and **4** inches diameter, with speed of 1,500 revolutions per minute. Also set of **Steel** Turning Chisels, made from *Jessup's Best Improved* English Steel. Price complete, including *Lathe* and *Drilling Attachment,* one Morse



Flint Drill, Wrench, Oil Can, Screw-driver, six Improved Fret Saws, and one large Saw $^3/_{16}$-inch wide for cutting up timber. Also one set of Turning Chisels, boxed tight, and delivered on car at Factory all for $8—a reduction of $3 from last year's price. Receiver to pay expressage.

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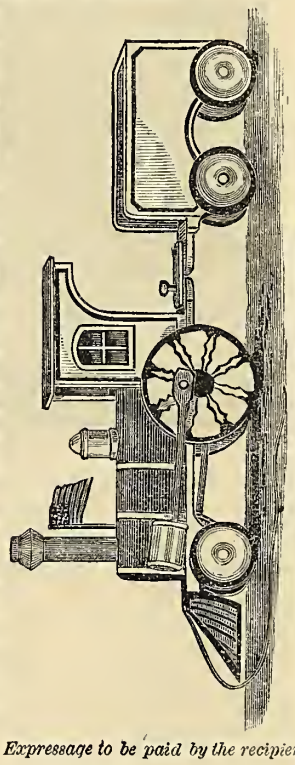
This new Toy is a marvel as to its simplicity. At every revolution of the "driving wheels" there is produceda good, strong whistle, which adds greatly to the liveliness and interest of the Toy, and gives much pleasure to the boy or girl—the young engineer who runs it. It is finely painted, and it can be easily seen, from the dimensions as given, that there is a great deal in it for a $1.00 Mechanical Toy.



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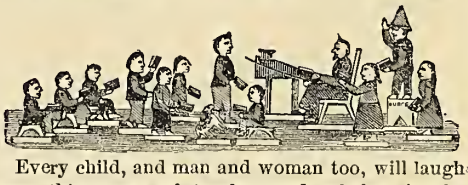

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